

# Journal

## OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—San Antonio, Oct. 15-18, 1956

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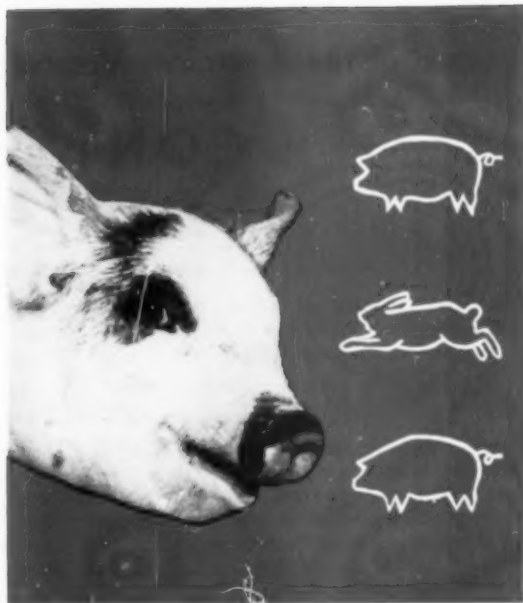
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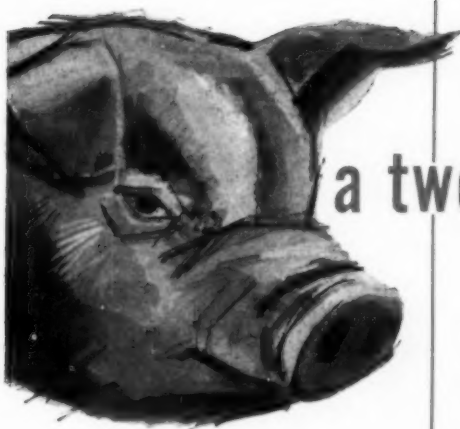
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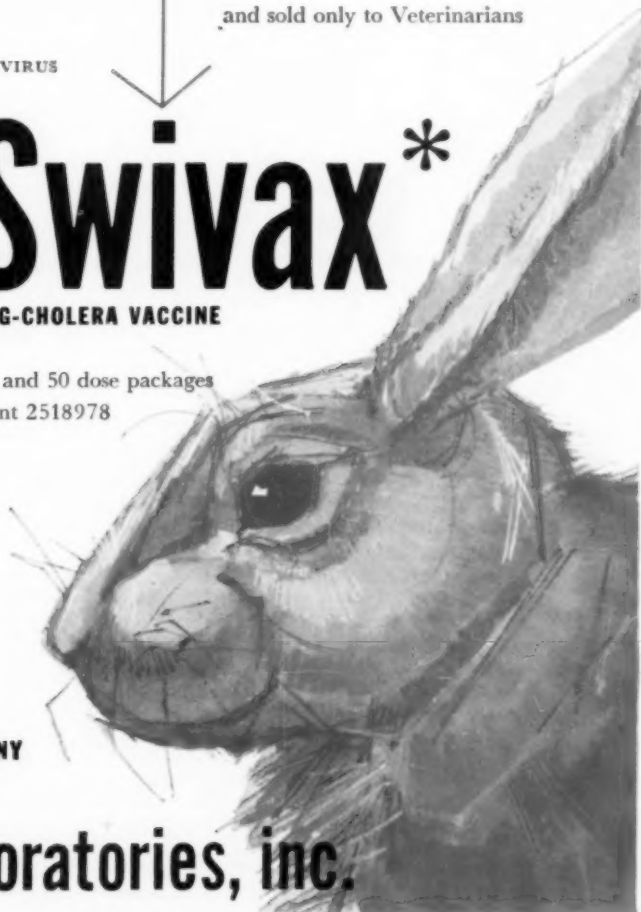
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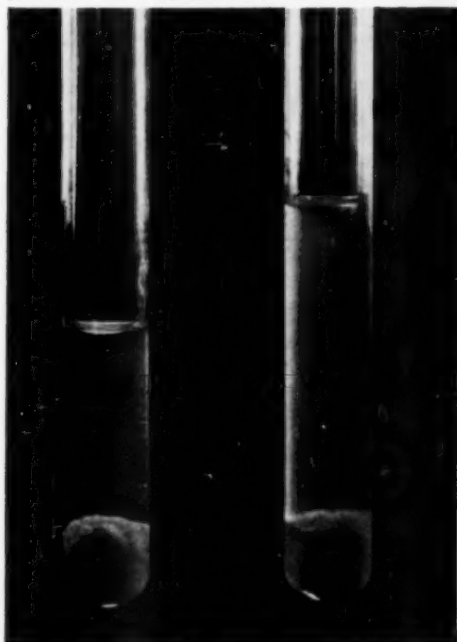
- ☐ Anthony: **Diseases of the Pig**, 4th ed. 380 pp., 53 figs. (1955) \$5.00
- ☐ Benesch and Wright: **Veterinary Obstetrics (Equine and Bovine)** 468 pp., 244 figs. (1951) \$10.00
- ☐ McCunn: **Hobday's Surgical Diseases of the Dog and Cat**, 6th ed. 459 pp., 330 figs. (1953) \$7.00
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- ☐ Kirk: **Index of Treatment in Small Animal Practice**, 3rd ed. 897 pp., 194 figs. (1954) \$11.00
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# AVMA ☆ Report

## *Veterinary Medical Activities*

✦ President Floyd Cross and President-Elect Wayne O. Kester attended the Symposium on Atomic Energy and Veterinary Medicine on April 30 to May 2, which was sponsored by the Oak Ridge Institute of Nuclear Studies, in cooperation with the Oak Ridge National Laboratory, U.S. Atomic Energy Commission.

★ ★ ★

✦ Assistant Executive Secretary H. E. Kingman appeared before various committees of Congress on May 9 and 10, giving testimony on behalf of the AVMA on S. 3176 (poultry inspection by Food and Drug Administration) and S. 1636 (humane slaughter).

★ ★ ★

✦ Dr. Kingman also visited the University of Illinois to participate in the AVMA Student Chapter meeting on May 23.

★ ★ ★

✦ The Board of Governors (J. M. Arburua, chairman; Floyd Cross, and Wayne O. Kester) will meet in Fort Collins, Colo., on June 8-10.

★ ★ ★

✦ Officers of the Army and Air Force Veterinary Corps, who attended the Dairy and Meat Hygiene School at the Quartermaster Depot, Chicago, visited Association headquarters on April 26. Members of the AVMA staff spoke to the group on the organization and activities of the Association and on other professional matters. Dr. M. H. Kassem, director general, Veterinary Department, Ministry of Agriculture, Cairo, Egypt, who was visiting the AVMA central office, also spoke briefly to the group.

★ ★ ★

✦ AVMA committees holding meetings at Association headquarters included the Special Committee on Insurance, May 7; Special Committee on Brucellosis, May 16; and Council on Education, May 19-21.

★ ★ ★

✦ Lt. Colonel Norbert A. Lasher, from the Headquarters of the 3rd Air Force, Europe, represented the AVMA at the Royal Society of Health conference in Blackpool, England, April 24-27.

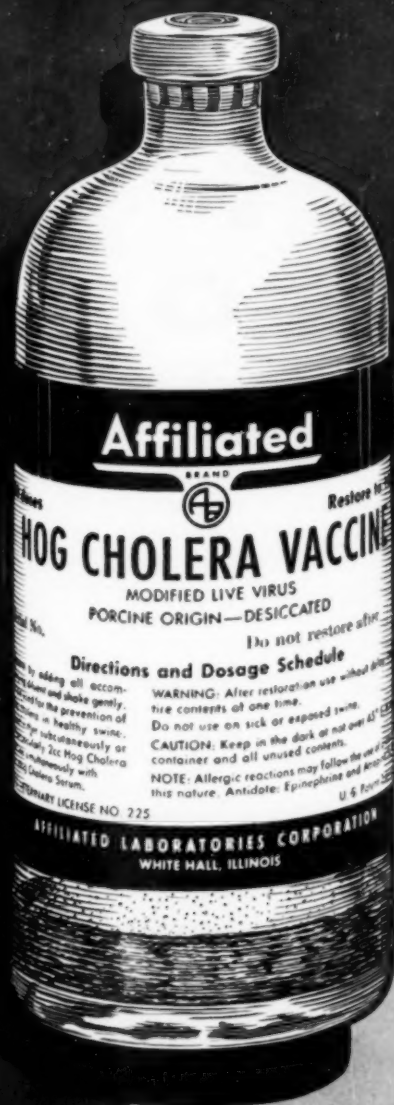
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✦ Executive Secretary Hardenbergh and Assistant Executive Secretary Kingman visited Cleveland, Ohio, to inspect convention facilities in that city on May 15.

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✦ John S. McLaren of Fairall and Company, AVMA public relations counsellor, met with the AVMA staff at Association headquarters on May 25.

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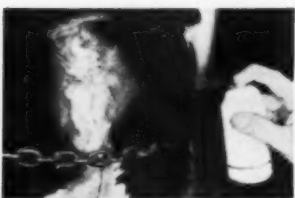
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1. Conner, G.H.: Vet. Med. 50:259 (June) 1955.

2. Watts, R.E.: J.A.V.M.A. 125:40 (July) 1954.

3. Wendt, W. E.: Personal communication (Sept.) 1954.

4. Choy, D.S.J., and Wendt, W.E.: U.S. Armed Forces M.J. 3:1241 (Sept.) 1952.

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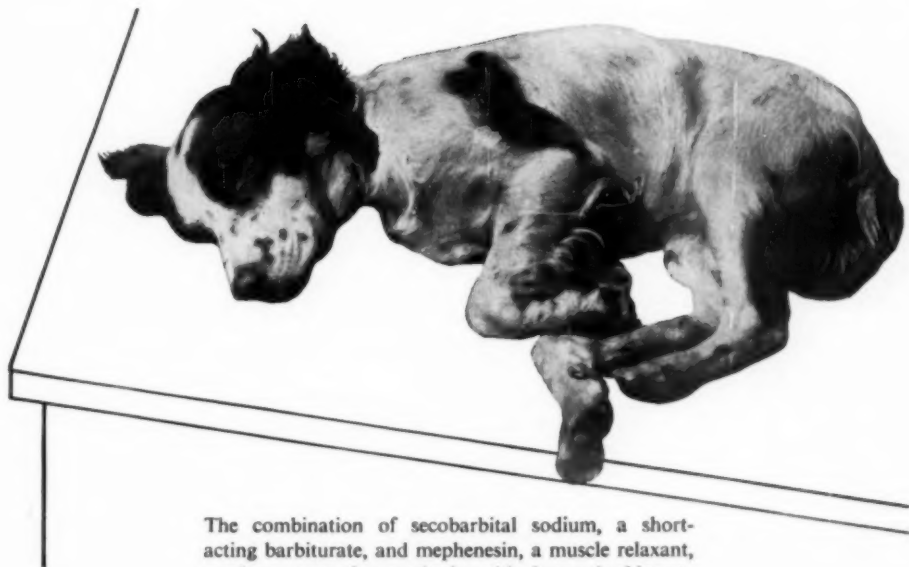
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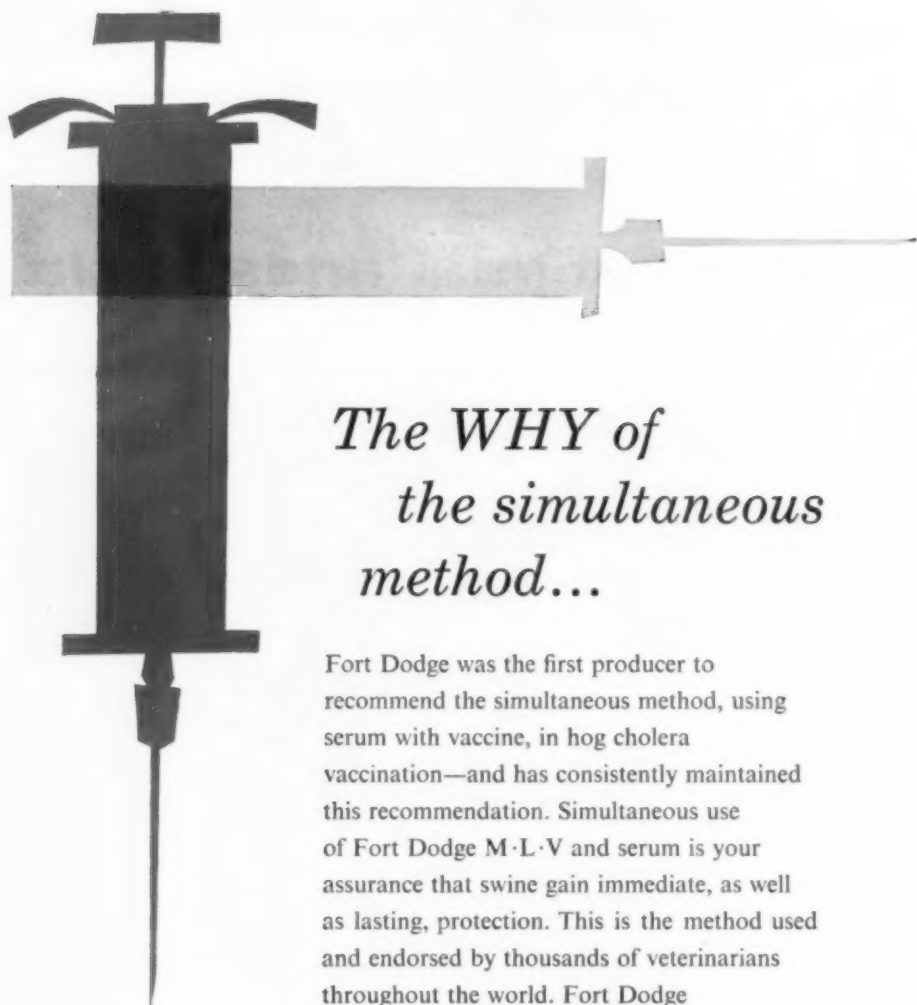
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# JOURNAL

of the American Veterinary Medical Association

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## *In Vitro* and *in Vivo* Use of Antibiotics Against *Vibrio Fetus*

J. F. RYFF, D.V.M., and HAROLD BREEN, D.V.M.

Laramie, Wyoming

DOLL AND WALLACE<sup>1,2</sup> have indicated that blood levels of streptomycin could be maintained in sheep by injections at three-hour intervals, the concentrations being in proportion to the amounts injected. Prier<sup>3</sup> has described the *in vitro* effect of antibiotics against *Vibrio fetus*. With the three strains employed, marked differences in susceptibility were usually noticed. This work was expanded to determine if such differences could be consistently expected. From the practical standpoint, if *V. fetus* could be found to be highly tolerant to one or more antibiotics, their incorporation into a selective medium might assist in the isolation of the organism from contaminated material. If *V. fetus* were found routinely susceptible, on the other hand, such *in vitro* results would furnish guidance for *in vivo* usage.

### MATERIALS AND METHODS

Seven strains of *V. fetus* (A to G), originally secured from Gordon Robertstadt, University of Wyoming; one (5090), from B. D. Firehammer, Montana Veterinary Research Laboratory; and four (22925 and 22166 from aborted lambs and 22965 and 23115 from aborted calves) of our isolation were used in the *in vitro* studies. These cultures, all of which were H<sub>2</sub>S-negative and possessed the accepted characteristics of *V. fetus*, were maintained by weekly transfers in Albimi Brucella broth with 0.15 per cent agar added. Difco bacto-sensitivity disks were used to secure the desired amounts of antibiotic in 2-ml. amounts of Albimi Brucella broth; inoculation was made by a standardized loop and, for each series, an untreated control tube of broth was included for comparison. Readings for presence or absence of growth were

made after three days' incubation at 37° C. Results are summarized in table 1.

In the 1955 lambing season, vibronic abortion in ewes was confirmed in several flocks by laboratory recovery of *V. fetus*. Three such flocks were used in an evaluation of antibiotic treatment. The treated ewes were identified but not separated from the controls. General management procedures were maintained, so that there was no movement to clean ground or removal of aborting ewes.

After results from this procedure were available, it was decided to determine what effect the antibiotics used would have when given to a normal sheep and its blood serum titrated against *V. fetus*, strain 22166. A ewe, weighing approximately 100 lb., was bled, given the antibiotic intramuscularly, and then bled again at suitable intervals. The serum so secured was diluted with Albimi Brucella broth and the tubes inoculated and read as for the *in vitro* antibiotic tests, the preinjection blood serum serving as a control.

### RESULTS

The *in vitro* testing of various antibiotics on 12 strains of *V. fetus* (table 1) indicates that rather uniform results might be expected from strain to strain. *Vibrio fetus* appears reasonably susceptible to the antibiotics employed, with the exception of bacitracin.

Three affected flocks of ewes were treated with antibiotics. On April 15, 1955, when 61 of a flock of 150 pregnant ewes had aborted and 2 of these had died, 22 ewes were injected intramuscularly with polyotic®: 7 ewes received 1.0 Gm. and, of these, 4 aborted and 3 had live lambs; 8 ewes received 0.5 Gm. and, of these, 6 aborted and 2 had live lambs; and 7 ewes received 0.25 Gm. and, of these, 5 aborted and 2 had live lambs. Thus, of the 22 ewes treated with polyotic, 15 aborted and 7 had live lambs. Sixty-seven pregnant ewes handled identically were available as controls.

From the Wyoming State Veterinary Laboratory, Laramie. Supplies of polyotic and of terramycin and streptomycin were made available by Lederle Laboratories Division of American Cyanamid Co. and Chas. Pfizer and Co., Inc., respectively. This assistance is acknowledged by the authors.

TABLE 1—Concentrations of Antibiotics Tolerated by and Inhibiting Culture Growth of *Vibrio fetus*\*

Strain of <i>V. fetus</i>	Aureo- mycin	Baci- tracin	Chloro- mycin	Dihydro- strepto- mycin	Ilotycin†	Neo- mycin	Peni- cillin	Poly- myxin B	Terra- mycin
A	2/2	50/2	2/2	2/1	2/2	2/2	1/10	1/5	2/10
B	2/2	50/2	2/2	2/1	2/2	2/2	1/10	1/5	2/10
C	2/10	50/2	2/2	2/1	2/2	2/2	1/10	1/5	2/10
D	2/10	50/2	2/2	2/1	2/2	2/2	1/10	5/10	2/10
E	2/10	50/2	2/5	1/5	2/5	2/2	1/10	5/10	2/2
F	2/10	50/2	2/2	0.5/2	2/5	2/2	1/10	2.5/10	2/4
G	2/2	20/50	2/2	1/5	2/5	2/2	2/2	5/10	2/2
5090	2/10	50/2	2/5	2/1	2/5	2/2	1/10	2/15	4/10
22925	2/10	10/20	2/2	10/50	2/5	5/10	1/10	2/5	2/5
22166	5/10	50/2	2/5	1/2	2/2	2/2	1/10	5/10	5/10
22965	2/10	50/2	2/2	2/1	2/2	2/2	2/1	2/5	2/2
23115	5/10	50/2	2/2	2/1	2/2	2/2	2/1	2/5	2/4

\*Amount tolerated expressed as numerator; amount inhibiting growth expressed as denominator; ?=not determined. Amounts given are for micrograms of antibiotic per milliliter of medium, except for bacitracin and penicillin which are expressed as units per milliliter.

†Ilotycin (erythromycin, Lilly) bacto-sensitivity disks furnished by Eli Lilly and Co.

Subsequent to April 15, 31 of these aborted and 36 lambed normally.

Flock 2 was made up of some 600 ewes. On May 6, 1955, when approximately 400 lambs had been aborted and only 4 live lambs had been secured, 74 ewes were given 1.0 Gm. of terramycin® intramuscularly. Following this, 2 lambs were aborted, 44 normal lambs were dropped, and 2 ewes died. A group of 140 untreated ewes, in the same period, had 7 aborted lambs and 67 live lambs, and 1 ewe died.

Band 3 consisted of 1,326 ewes. By May 5, 1955, when 363 had aborted, 187 ewes received 1.0 Gm. of streptomycin intramuscularly and 776 untreated ewes served as controls. On the day following treatment, 2 treated ewes and 7 control ewes aborted. Thereafter, abortions ceased in both groups.

When a normal sheep was later given comparable amounts of the antibiotics used, its serum was found to inhibit the *in vitro* growth of an ovine strain of *V. fetus* for comparably short periods of time after treatment (table 2).

#### DISCUSSION AND CONCLUSIONS

With the method of assay employed, 12 strains of *V. fetus* were found to be consistently susceptible to many of the antibiotics with the notable exception of bacitracin. With the disastrous results that frequently follow *V. fetus* infection in a band of sheep, one would hope that the use of such materials might assist in curtailing losses. At present, the disease is too sporadic to justify wide-scale prophylactic vaccination even if an effective vaccine were available. Available information

would indicate that vaccination after the disease appears would not be early enough for benefit, for presumably many of the ewes would be in the incubative stage of the infection. In developing a vaccine, it would also be necessary to consider the

TABLE 2—Growth of *Vibrio fetus* in Broth with Serum Added from Antibiotic-Treated Sheep

	Serum dilutions					
	1:2	1:5	1:10	1:25	1:50	1:100
Prior to 1 Gm. dihydro-streptomycin sulfate	+	+	+	+	+	+
4 hours later	+	+	+	+	+	+
12 hours later	+	+	+	+	+	+
Prior to 1 Gm. terramycin	+	+	+	+	+	+
3 hours later	+	+	+	+	+	+
8 hours later	+	+	+	+	+	+
12 hours later	+	+	+	+	+	+
Prior to 1 Gm. polyotic	+	+	+	+	+	+
4 hours later	+	+	+	+	+	+
8 hours later	+	+	+	+	+	+
24 hours later	+	+	+	+	+	+
48 hours later	+	+	+	+	+	+

\* + = growth; — = inhibition.

strain differences reported. Thus, therapy with antibiotics when the disease occurs would seem to be a logical procedure, especially when combined with removal of the sheep to clean premises and separation of aborting ewes from the flock.

In terms of percentages, a single dose of polyotic at various levels was followed by 68.1 per cent of the ewes aborting, whereas 46.2 per cent of the controls aborted. In flock 2, in which the abortion storm was dying out, 2.5 per cent of the terramycin-treated ewes aborted as compared to 6.1 per cent of the control ewes. Again, in band

3 in which the infection had practically terminated, 1.0 per cent of the streptomycin-treated ewes and 0.9 per cent of the controls aborted. No benefit could thus be credited to a single dose of antibiotic under these conditions. As indicated in table 2, 1.0 Gm. of polyotic given to a ewe would be expected to furnish a blood level sufficient to inhibit *V. fetus* at a 1:2 dilution of serum for 24 hours only, 1.0 Gm. of terramycin at a 1:2 or a 1:5 dilution up to eight hours, and 1.0 Gm. of streptomycin at a 1:25 dilution for only about four hours. Thus, repeated or a repository type of antibiotic usage still might be useful.

#### SUMMARY

Twelve strains of *Vibrio fetus* were relatively susceptible to inhibition of growth by various antibiotics using Difco bacto-sensitivity disks to secure the desired amounts in a broth medium. Bacitracin was not effective; ten of the strains tolerated 50 units per milliliter. Single doses of polyotic,<sup>®</sup> terramycin,<sup>®</sup> and streptomycin in field flocks of sheep affected with *V. fetus* failed to influence abortions. Such antibiotics used on a normal sheep indicated their serum levels would inhibit *in vitro* growth of *V. fetus* for only a relatively short time after use.

#### References

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<sup>2</sup>Doll, E. R., and Wallace, M. E.: Serum Levels of Streptomycin in Sheep. Vet. Med., 44, (1949): 70-72.  
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#### Fluoridation Reduced Tooth Decay

Ten years of fluoridation of the water supply at Brantford, Ont. (50,000 pop.), at an annual per capita cost of 9 to 14 cents, resulted in a constant increase in school children with teeth free from decay—from 5.18 per cent in 1944 to 21.83 per cent in 1955. The procedure is simple, easily controlled, and its safety is beyond question.—*Canad. J. Pub. Health*, March, 1956.

**Blood Sugar Level and Cancer Growth.**—High blood sugar levels associated with experimentally produced diabetes or with obesity reduced the rate of growth of cancer cells in mice.—*Sci. News Letter*, March 24, 1956.

#### Regional Conferences on Exotic Diseases

Six regional conferences, at which foreign diseases which might invade America were discussed, were held recently. Comparisons were made to similar native diseases to alert veterinarians to the details of differential diagnosis should the exotic diseases appear on this continent.

Three-day conferences, with federal and state veterinary personnel and many educational, research, public health, and practicing veterinarians present, were held, with attendance as follows:

Phoenix, Ariz. (March 15-17), 150  
Stillwater, Okla. (March 19-21), 230  
Bozeman, Mont. (March 22-24), 80  
Ames, Iowa (March 27-29), 350  
Atlanta, Ga. (April 9-11), 150  
Storrs, Conn. (April 17-19), 130

Dr. M. R. Clarkson presided at one of these meetings, Dr. C. D. Van Houweling at three, and Dr. R. J. Anderson at two. Other personnel from the Agricultural Research Service who participated at all or several of the meetings were Drs. F. A. Todd, who was chiefly responsible for the agenda, J. L. Hourrigan, C. L. Davis, F. J. Mulhern, and F. L. Herchenroeder from Washington, D.C., and Don Miller, of Phoenix, Ariz.

Chief contributors at the conference, and their subjects, were Lt. Col. F. D. Maurer, V.C., Armed Forces Institute of Pathology (rinderpest, contagious pleuropneumonia, Teschen disease, and African swine fever); and Dr. V. R. Kaschula, Rutgers University, formerly of the Union of South Africa (Rift Valley fever and bovine epizootic). Dr. Charles A. Mitchell, Hull, Que., discussed African swine fever at Storrs, and Dr. H. Marsh presented a paper on contagious pleuropneumonia at Bozeman.

Foot-and-mouth disease was discussed at western meetings by Dr. R. A. Bankowski and at later meetings by Drs. Jacob Traum, J. J. Callis, and M. S. Shahan.

Fowl plague and "Asiatic" Newcastle disease were discussed by the following in their respective regions: Drs. E. E. Jones, J. P. Delaplane, E. M. Dickson, C. A. Brandly and M. S. Hofstad, E. P. Johnson, and E. L. Jungherr.

Native diseases with which the exotic diseases could be confused were discussed by a number of speakers. Those who con-

tributed at more than one conference included: Drs. Rue Jensen, W. R. Pritchard, and W. A. Aitken. Many others took part at the conferences in their region.

In the past, a number of foreign animal diseases have been looked upon as problems that were peculiar to Asia, Africa, Europe, or wherever they happened to exist. With the advent of airplanes and the build-up of international trade and travel, foreign animal diseases have taken on a new and added importance to veterinary medicine and the livestock industry of the United States. In spite of the effective and rigid precautions which are continually in operation to help prevent the introduction of foreign diseases into this country, there is and always will be the possibility that some of them may gain entrance.

It is imperative that the veterinary profession learn more about these diseases—their early recognition, means of spread, prevention, and control—and that it cooperate in helping to develop and establish an effective organization that can be utilized immediately to minimize the losses that could result from the presence of these diseases in this country.

*Rinderpest* continues to be the world's most destructive bovine disease. Although not present in the Western Hemisphere, it remains a constant threat. *Rinderpest* is an acute, highly fatal, febrile disease of cattle and buffaloes. It is caused by a virus which has a destructive affinity for the mucous membranes of the digestive tract and for lymphoid tissue. Characteristic erosions develop in the mouth; hemorrhages and erosions occur in the digestive tract. Diarrhea is typically severe and debilitating.

The similarities between *rinderpest* and the new bovine diseases (mucosal disease and viral diarrheas) in the United States increase the need for prompt recognition and differential diagnoses.

*Contagious bovine pleuropneumonia* is a specific pneumonia of cattle caused by a pleuropneumonia-type organism *Asterococcus mycoides*. The disease is widespread, occurring in most of the world, with the exception of western Europe and the Western Hemisphere. Although difficult to transmit experimentally, it is readily acquired by susceptible cattle in direct contact with animals with active cases which, through coughing, contaminate the air around them with infectious droplets. The slow incubation period, up to four or five

months, and the frequency of chronic carriers complicate detection and control. Gross and microscopic lesions are characteristic and usually pathognomonic. In living animals, the diagnosis is most confidently made by the complement-fixation test. A hemagglutination test being evaluated in Kenya appears to be useful for screening suspects.

A vaccine prepared from attenuated cultures of the organism is reported successful in Australia. In Kenya, an avianized vaccine has proved effective.

*Rift Valley fever* is an acute, febrile, virus disease primarily affecting sheep, cattle, and man. It is transmitted by a variety of mosquitoes and other insects, but man may contract the infection while doing a necropsy or handling infected tissues. It occurs throughout equatorial Africa, taking its name from the Rift Valley. In 1951, it appeared in the Union of South Africa where it caused the loss of about 100,000 sheep and, at the same time, approximately 20,000 human infections (at first mistaken for influenza).

Recovery produces a lifetime immunity but the virus persists in jungle life, so the disease may reappear periodically (5 to 7 years). It causes a high abortion rate in sheep and cattle and a high mortality in lambs (up to 95%) and in calves. The course is rapid, with sudden death as in anthrax; chronic cases are rare. Pathological changes are found chiefly in the liver. A live, avianized vaccine prepared from a mouse-adapted strain of virus has proved safe and effective.

*Bovine epivaginitis or infectious infertility*, considered a most serious disease, has occurred in central and southern Africa in recent years. It is an insidious, chronic venereal disease probably caused by a virus. Native cattle are much more resistant than European breeds. In cows, it causes sterility due to cervicovaginitis or metritis and salpingitis; in bulls, permanent sterility due to epididymitis and orchitis. Definite diagnosis is difficult due to lack of serological or biological tests. The etiological agent apparently differs from that recently reported as an infectious catarrhal vaginitis of cattle in California (J.A.V.M.A., April 1, 1956: 357-361).

*Teaschen disease* is a febrile, contagious virus encephalomyelitis of swine which produces central nervous system irritability and paralysis. It was first identified in

Teschen, Czechoslovakia, in 1929 and continues to spread to other central and western European countries. From 70 to 90 per cent of affected pigs die. It is transmitted by contact and affects both domestic and wild swine. The incubation period is usually 14 to 21 days and death usually results from respiratory paralysis within two weeks.

Typical signs of Teschen disease include tremors, convulsions, incoordination, and progressive posterior paralysis. The appetite usually remains good. There are no specific gross lesions but microscopic changes in the brain and spinal cord are distinctive. They resemble those of poliomyelitis but there is no immunological relationship.

A recent aluminum hydroxide-adsorbed vaccine is fairly satisfactory.

*African swine fever* is an extremely contagious and fatal, acute, febrile, virus disease of swine. It closely resembles hog cholera (swine fever) but is immunologically distinct. It occurs in eastern, western, and southern parts of Africa. The course of the disease is somewhat shorter than in cholera. Fever is present several days before visible symptoms appear. After that, the animal usually dies in a day or two. The wart hog often is an inapparent carrier of the virus. Pathologically, it resembles cholera but the hemorrhages tend to be more severe.

The most distinguishing gross lesions are found: in the lymph nodes, often diffusely and incompletely hemorrhagic, resembling hemocysts; in the lungs, where marked interlobular edema is found in over a third of the cases; and in the heart, where severe subepicardial hemorrhages may occur. The kidneys may show petechiae as in cholera, or diffuse subcapsular or pelvic hemorrhages. Also, the gallbladder may be congested and edematous.

Attempts to secure an immune serum have failed because the affected swine so rarely recover.

*Newcastle disease* (fatal or "Asiatic" form) may initially appear as a rapidly spreading, quick-killing disease of poultry, with mortality reaching 90 to 100 per cent. The more resistant birds may show pathological changes similar to the native form, which occurs in all parts of this continent. Vaccination is effective but eradication with thorough sanitary measures and de-

layed restocking (2 or 3 months) are imperative on infected premises.

The fatal form of the disease appeared in California, in 1950, in a shipment of birds from China, but was immediately eradicated. It has likewise been eradicated from the El Paso, Texas, region three times since 1948, the latest in January, 1956. Nine times in recent years it has been diagnosed, while they were in ARS quarantine stations, in chickens, pheasants, quail, partridges, and doves from Eurasia.

*Fowl plague* (often called fowlpest) is a highly fatal, acute, virus disease of chickens, turkeys, and pheasants, but not of waterfowl. It somewhat resembles Newcastle disease. This disease was first recognized in Italy in 1878. The incubation period and duration are short and death usually occurs in two days. It is characterized by conjunctivitis, edema of the head and neck, white focal areas of necrosis on the comb and wattles, petechiae in the proventriculus and in the gizzard muscles, an enlarged spleen, highly congested ovaries, necrosis in various organs, and hemorrhages in the skeletal muscles and in the trachea. It occurred in the United States in 1924-1925 and 1929.

The inspection and quarantine branch of the ARS, charged with preventing entrance of foreign animal and plant diseases, maintains units at all major ports of entry. They have a remarkable record for efficiency.

### Leptospirosis in North Carolina

Due to the local prevalence of leptospirosis in man, serological tests for this disease are now routine at the North Carolina State Laboratory. It is not the classic Weil's disease but a mild form, usually accompanied by jaundice, and many cases are reported as infectious hepatitis.

Of 441 specimens tested, 109 were positive—29 for *Leptospira canicola* and 36 for *Leptospira pomona*, with the others showing cross agglutination. The most cases (21) were in hide handlers. When animals associated with infected persons were tested, 69 of 93 were positive. Of 18 dogs, 15 were positive, 10 with *L. canicola*. Of 49 cattle, 37 were positive, 31 with *L. pomona*. There were also a few positive specimens in swine, horses, goats, mules, and sheep.—*Pub. Health Rep.*, March, 1956.





Fig. 1—The Leeper Animal Hospital, Des Moines, Iowa, has an exterior of red clay tile.

## The Leeper Animal Hospital

RUSSELL A. LEEPER, D.V.M.

*Des Moines, Iowa*

The Leeper Animal Hospital, recently completed, embodies many principles of efficiency of operation and economy of construction. Built on a corner lot with off-the-street parking in front, it has a capacity of 70 small animals.

The exterior is of red clay tile and the partition walls are finished with a glazed tile wainscoting to a height of 5 feet; the upper portion is cinder block.

The ceilings are lined with acoustic tile

and the floors are of glazed quarry tile. The door frames are of steel. The ventilating system consists of an exhaust fan connected to a duct with openings in the ceiling of the central corridor.

The surgery, laboratory, and workrooms are located opposite the wards where they are readily accessible.

All of these features add to the ease of operation, the comfort of all concerned, and to low maintenance costs.

Fig. 2—Reception room of the Leeper Animal Hospital showing the acoustic ceiling, glazed partitions, steel door frames, and floors of glazed quarry tile.



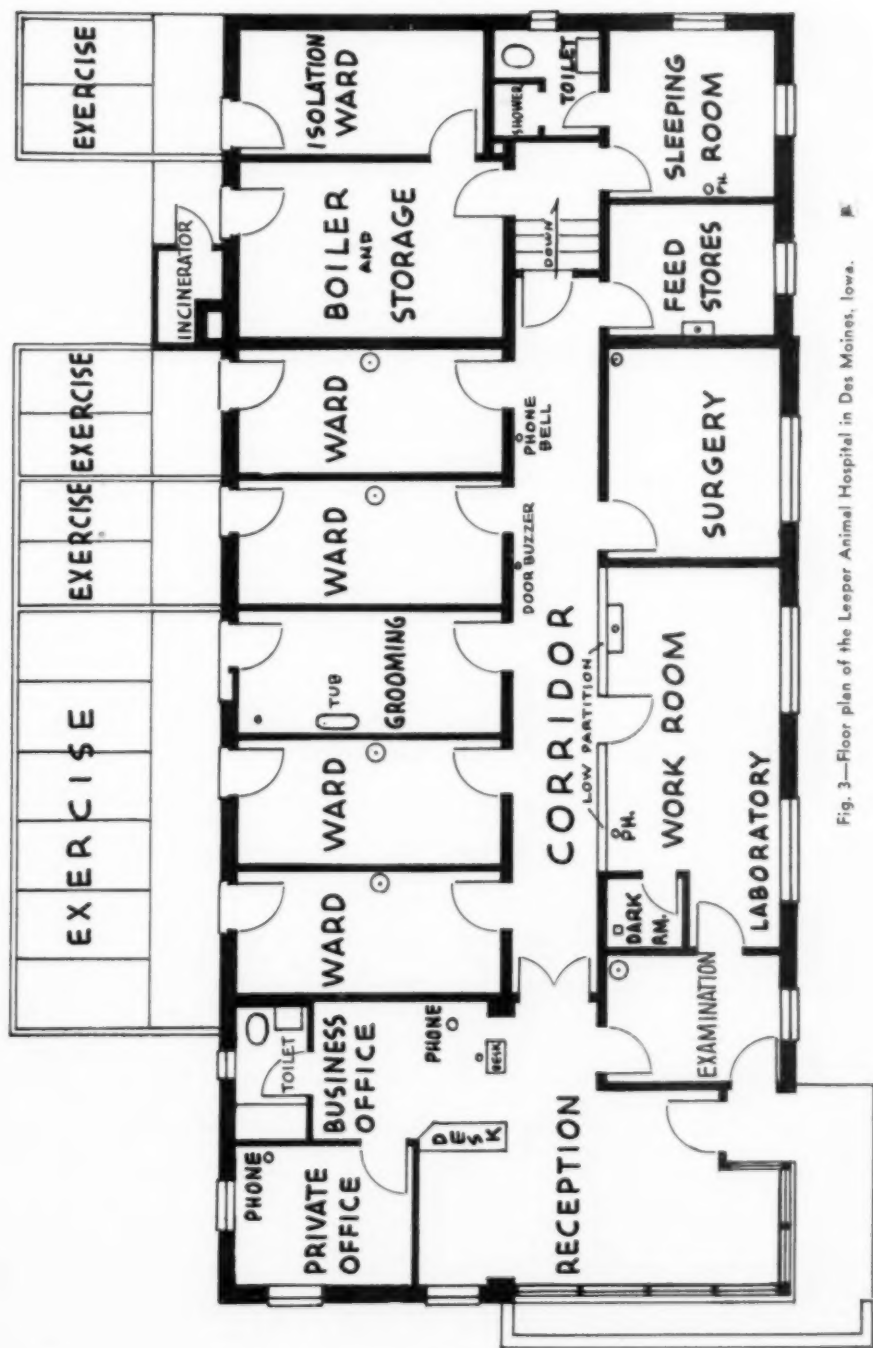


Fig. 3—Floor plan of the Leeper Animal Hospital in Des Moines, Iowa.



## Practical Field Surgery

J. R. BROUSSARD, Jr., D.V.M.

*Biloxi, Mississippi*

IT IS HOPED that this report on 2 fairly unusual cases encountered in general practice will serve to encourage the average general practitioner to tackle cases, which occasionally occur, for which radical field surgery is required.

In the author's opinion, the average practitioner, armed with the medicaments available today and possessing any degree of confidence, can perform successful operations in cases which too often are classified as hopeless, resulting in euthanasia being recommended.

Conscientiously attempted, apparently difficult surgical procedures are the best practice and self-confidence builders. A surprisingly great number of these surgical patients will recover.

*Case 1.*—On April 15, 1954, 20 miles from the office, a 7-year-old Jersey cow was examined, which had been severely bruised in the right flank by the horn of another animal. This resulted in a large ventral hernia developing just anterolateral to the udder. The hernia had been present about 12 hours and had enlarged to the size of a 5-gal. bucket.

After making a prognosis of possible fatality, the few instruments on hand were prepared by immersing them in a 2.0 per cent quaternary ammonium solution. The cow was cast and restrained with three ropes. An adequate local anesthetic, using 2.5 per cent procaine hydrochloride, was injected along the proposed line of incision. (A paralumbar block would have been better.)

The incision line was shaved and the entire area was scrubbed with a strong quaternary ammonium solution. An 8-inch incision was made through the skin into the hernia. The peritoneum had been broken by the force of the blow and a portion of the small intestine had herniated through a 2-inch rent in the abdominal aponeuroses. Close examination revealed an extremely edematous intestine and an omentum becoming gangrenous due to strangulation. Obviously, this could not be

replaced, so traction was applied until a small amount of healthy intestine was exposed. Regular forceps were applied proximal and distal to the damaged portion and about 8 feet of intestine and omentum (12 lb.) was excised, requiring the ligation of several large vessels to prevent excessive hemorrhage.

Then using No. 0 chromic catgut, the healthy ends of the intestine were anastomosed by applying a single continuous suture, taking 1/4-inch bites, 1/4 inch apart.

The anastomosed intestine was then replaced in the abdomen and 250 cc. of a 0.2 per cent furacin® solution (Eaton) was poured into the abdominal cavity. It should be mentioned that sufficient help to spray flies was not on hand and also that the entire surgical area was exposed to flying dust and hair particles as the cow made a few attempts to rise.

The peritoneum and muscle aponeuroses were sutured separately using continuous No. 2 chromic gut. Then a liberal application of a furacin dressing powder was applied and the skin sutured with interrupted umbilical tape sutures. Five grams of dihydrostreptomycin and 3,000,000 units of penicillin were injected intramuscularly, this treatment being repeated in 48 hours by the owner. The cow did not miss a meal and, in 72 hours, was back to normal milk production. The skin sutures were removed in two weeks.

*Case 2.*—On April 24, 1954, an 8-year-old Jersey cow was unable to deliver an unusually large schistosomus monster. The fetus was folded back upon itself and presented a diameter of approximately 16 inches. Several such animals had been delivered previously by partial embryotomy and forceful traction, but a cesarean section was obviously necessary in this case due to the extreme size of the fetus.

This operation was done, as with the previous one, with instruments routinely carried. The cow was cast on her right side, restrained with ropes, and the surgical area was prepared. After injecting a local anesthetic of 2.5 per cent procaine solution, a diagonal incision about 14 inches long was

Dr. Broussard is in small animal practice in Biloxi, Miss.

made in the anterodorsal portion of the left flank. The rumen was pushed forward and upward and the intestines were manually repressed with a towel saturated with a 0.2 per cent quaternary ammonium solution. A 15-inch incision was made in the uterus and two men had difficulty in forcefully pulling the fetus through the incisions. The uterus was lacerated.

One row of continuous No. 2 chromic gut sutures was used in repairing the uterus. The fetal membranes were not removed as they were firmly attached. Two 240-gr. "triple sulfonamide" boluses were placed in the uterus and approximately 5 oz. of sulfonamide-urea powder was dusted intraperitoneally. Continuous No. 2 chromic gut sutures were placed separately in the peritoneum and in the muscle fascia. Interrupted umbilical tape sutures were used in the skin. Penicillin and streptomycin were injected intramuscularly and the patient was left lying in a comfortable position. Illness from accidentally injecting myself with *Brucella abortus*, strain 19, vaccine while intradermally vaccinating adult beef cattle, prevented a revisit to this animal for six days. The cow then had a temperature of 106 F., a distended abdomen, stilted gait, anxious expression, and sunken eyes—indicative of advanced peritonitis. She had taken no feed and little water since the operation.

An injection of 300 cc. of furacin solution, 0.2 per cent, was given intraperitoneally through the left lumbar fossa; 2 Gm. terramycin® was given intravenously; and 11 oz. of magnesium hydroxide powder with a rumen stimulant was given orally. The prognosis was death within 48 hours but, two weeks later, when called by the owner to remove the sutures, the cow was found in a healthy condition, giving 4 gal. of milk daily.

Since these two experiences, no routine abdominal operations have been done without instilling furacin solution before suturing the peritoneum, leaving a few drops in the syringe for the incision line while suturing. In small animals, 5 to 10 cc. is used, and 100 to 200 cc. in large animals.

**A "Trichomonad Cyst" in a Cow.**—A cyst in the Gartner's canal in the vagina of a cow contained viable trichomonads eight to 11 weeks after vaginal exudate had become negative for organisms.—*Austral. Vet. J., June, 1956.*

## Esophageal Obstruction in a Cat

RICHARD L. OTT, D.V.M.

Pullman, Washington

A cat was submitted for treatment five days after it had apparently attempted to swallow an entire clavicle (wishbone) of a chicken.

Although the cat had successfully swallowed the fused portion of the two clavicles, which extended down into the esophagus,



Fig. 1—Radiograph of the head and neck of a cat showing clavicle of a chicken lodged in the area.

the other ends were too widely separated and the free end of the dorsal clavicle was lodged in the submucosal tissues of the soft palate while the free end of the ventral one was embedded in the larynx (fig. 1).

After the cat was anesthetized, the dorsal clavicle was cut close to the fused portion, grasped with a hemostat, freed by pushing it down the esophagus, and removed. To remove the ventral clavicle, an incision was made through the skin into the larynx. This bone was also cut near the fused portion and removed. The fused portion was then freed by grasping it with tongs (forceps) admitted into the esophagus through a gastroscope. The operation took approximately half an hour.

The cat responded satisfactorily and was dismissed in five days.

From the Department of Clinical Medicine and Surgery, College of Veterinary Medicine, State College of Washington, Pullman.

## Surgical Relief for Stenotic Nares in a Dog

HARMON C. LEONARD, D.V.M.

*Cheshire, Connecticut*

Some dogs of the brachycephalic type suffer from respiratory distress. While the trouble may originate from different parts of the respiratory system, it frequently is found at the external nares. The lateral cartilages may lack normal rigidity and,

dog is placed under general anesthesia and a tracheotomy tube is inserted through the mouth. The lateral lip of the nostril is grasped with forceps and an elliptical incision is made first on the medial side of the lip roughly parallel to the outer border, then one parallel to it on the lateral surface, meeting the medial incision at acute angles. The two integument borders are brought together with fine silk suture. The operation is duplicated on the other nostril. The resulting scar is minimal. As the tissue



Fig. 1—After the dog is anesthetized, the lateral lip of the nostril is grasped with a forceps and an elliptical incision is made on the medial side of the lip.

upon inspiration, the nostrils collapse and are partially occluded. The resulting chronic anoxia often causes stunting and unthriftiness.

This condition can be corrected by a simple procedure, as here described. The

involved is vascular, some hemorrhage is encountered.

To date, 16 of these corrective operations have been performed and all have given marked relief.

As the condition is possibly of a hereditary nature, owners have been advised against breeding these dogs.

Dr. Leonard is a general practitioner in Cheshire, Conn.

Fig. 2—The dog after surgery, showing (A) the corrected nostril; and (B) the over-all effect of the operation.



### Bovine Hydramnios and Hydrallantois

In six years, 12 cases, mostly in middle-aged dairy cows, of dropsy of either the fetus or the fetal membranes were referred to the School of Veterinary Science, University of Liverpool. Five were dystocia cases with edema confined to the calf.

In 7 cows, the uterus was grossly distended with fluid. One of the 7 cows delivered dead twins but died a week later. Another died 24 hours after 7-month twins were removed by cesarotomy. A two-stage operation, surgically installing a tube through the flank into the uterus to drain the fluid one day, with cesarotomy the next (see Wolfe *et al.* JOURNAL, Nov., 1952: 359), was successfully done on each of the other 5 cows. Of the 5, the fluid was in the allantoic cavity (hydrallantois) in 4 and in the amniotic cavity (hydramnios or hydrops amnii) in only 1.

Three of the 7 cows had twins. Four of the 10 calves were normal, the others showed a variable cystic condition of one or both kidneys associated, usually, with marked edema and ascites.

In 5 of the 6 cases reported, the fetal membranes were markedly edematous; in 1 they were normal. They were easily removed in 1, retained for several days in the others. In all cows, the cervix relaxed sufficiently to admit a hand in 48 hours after cesarotomy. Several days passed before the muscles resumed their tone and the abdomens their normal appearances. Postoperatively, 2 cows showed a marked craving for salt, others did not. One of the 2 cows which were rebred conceived three months after the operation.—P. A. Neal, *Vet. Rec.*, Feb. 4, 1956.

[On Jan. 17, 1947, torn fetal membranes were noticed emerging from a mixed-breed heifer which had been developing an enlarged abdomen. Her abdomen was no longer distended but sagged instead. Otherwise she seemed normal, with no signs of labor. Her vulva was not relaxed but the cervix was open. The amnion was intact, thick, and edematous and, when perforated, the hindlimbs of the small but living calf were secured with chains and the hips easily drawn into the pelvic cavity. A bulging abdomen prevented further delivery until evisceration was completed.

The huge kidneys of the calf were gray and glistening with edema but no cysts were found. They weighed 9 lb., about 20

per cent of the calf's weight. The edematous fetal membrane separated readily so most of it was removed.

The heifer showed no ill effects from her experience. Apparently, excessive quantities of fluid had passed through the fetal kidneys into the allantoic sac but the sac had burst before the "hydrops amnii" caused distress.—W.A.A.]

### *Nymphomania in the Cow and Mare.*—

In cows, nymphomania is characterized by enlargement of the uterus and by cystic ovaries. They can be treated by oophorectomy or by enucleation of the cysts, followed by hormone injections. In the mare, 60 per cent of the ovaries are not enlarged and oophorectomy is the only effective treatment.—*Vet. Bull.*, March, 1956.

### *Vibronic Abortion in Sheep in Spain.*—

Vibronic abortion in sheep was reported in Spain for the first time. Of 347 pregnant ewes, 80 aborted. When guinea pigs in advanced gestation were injected intraperitoneally with pure cultures of the *Vibrio*, they aborted after 24 to 72 hours.—*Vet. Bull.*, March, 1956.

### Fresh Semen Transported by Air

To inseminate Zebu cows in Nigeria, semen was collected, buffered in 50 per cent egg yolk sodium citrate diluent, diluted 1:10 at 30 C., cooled to 4 C., packed in cracked ice in a thermos flask, and delivered by airplane within 24 hours.

Of 45 cows inseminated, 23 conceived at the first service, 5 at the second, and 1 at the third.—*Vet. Rec.*, March 3, 1956.

### Closed Cervix at Estrus, in Cows

Intrauterine insemination was found, in Britain, to be prevented by a constriction of the cervix of the uterus in 16 (0.1%) of 16,238 dairy and beef cattle. Eleven of the 16 were heifers, 3 had had 1 calf, and 2 were older cows. Of 15 injected with 5 cc. of synthetic estrogen (dienoestrol), 1 mg./cc., the dilatation of the cervix of 11 occurred within 25 hours (of 5 in 5 to 8 hours). The 11 were inseminated, with pregnancy resulting in 5. Three became pregnant at later inseminations.—*Vet. Rec.*, Feb. 25, 1956.

# Clinical Data

## The Sequence of Events Preceding Death of a Cow in Acute Experimental Bloat on Fresh Alfalfa Tops

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IN MOST clinical cases of bloat in cattle, the history prior to the arrival of the veterinarian usually is incomplete. In our studies on the experimental production and prevention of bloat, we had an opportunity to record carefully the feeding regimen prior to its development and to follow the sequence of events preceding the death of 1 cow.

### EXPERIMENTAL METHODS

On Nov. 8, 1955, 14 dry dairy cows were placed on a regimen of alfalfa tops. Of the 14 cows, 6, in addition to the 1 that died, were on the same regimen of alfalfa tops fed *ad libitum* over a six-hour period without supplemental feed while 7 additional animals were fed alfalfa silage with the fresh tops. The alfalfa was in the prebloom stage but was not particularly succulent. The tops, comprising the upper 4 to 6 inches of the alfalfa plants, were harvested with a Gehl standard fly-wheel-type forage harvester and contained 24.0 per cent dry matter. The protein content of the dry matter was 26.2 per cent. The approximate time for beginning the feeding of freshly cut tops was 8:00 a.m., with an afternoon feeding at approximately 1:00 p.m. The feed of 7 cows was supplemented with approximately 30 lb. of alfalfa silage during

mined by the use of a tympanometer,<sup>2</sup> a device for measuring rumen pressure by determining the force necessary to indent the left flank a standard amount.

### RESULTS

The data on the consumption of alfalfa tops and on the incidence of bloat show (table 1) that bloat was not manifested until after three days of feeding tops (the first were fed on the afternoon of Nov. 8). None of the animals was treated for bloat throughout the trial. These findings, that animals may recover spontaneously from severe bloat,<sup>1</sup> are in line with our earlier observations. On November 13, the bloating was less severe than on preceding days, undoubtedly because it had rained the night before and the alfalfa had lodged, making it necessary to cut the tops much longer than on preceding days. On this date, the tops contained only 17.0 per cent dry matter, 25.6 per cent of which on a dry matter basis was protein.

The consumption of tops by cow 77, which died, did not differ markedly from the average consumption of the group

TABLE 1—Data on Feed Consumption and the Incidence of Bloat in 14 Cows Fed Alfalfa Tops *ad Libitum* for Six Hours Daily

Date (1955)	Range of alfalfa tops consumed (lb.)	Ave. alfalfa tops consumed (lb.)	Alfalfa tops consumed on dry basis (lb.)	No. of cows bloating	No. of cows markedly bloated (in excess of 35 mm. Hg)	Alfalfa tops consumed by cow 77 (lb.)
11/9	9 to 27	20	4.8	None	None	22
11/10	41 to 45	43	10.3	None	None	41
11/11	43 to 70	58	13.9	9	3	57
11/12	43 to 75	54	13.0	9	4	29*
11/13	36 to 93	55	9.4	8†	1	

\*Cow 77 died following morning feeding. † only 13 cows on test on this date.

the night to determine if the silage would prevent bloat. The silage had no appreciable effect on the occurrence of bloat nor did it influence the amount of tops which were consumed in the six-hour period during which the cows had access to feed. The amount of alfalfa tops consumed on Nov. 8, 1955, was not recorded. The degree of bloat was deter-

(table 1). The sequence of events on the morning of November 12 preceding her death follows:

8:40—Given 35 lb. fresh alfalfa tops with 29 lb. consumed before 9:20.

9:20—Slightly bloated, tympanometer reading of 13.6 mm. Hg.

9:35—27.3 mm. Hg rumen pressure.

9:50—44.5 mm. Hg rumen pressure.

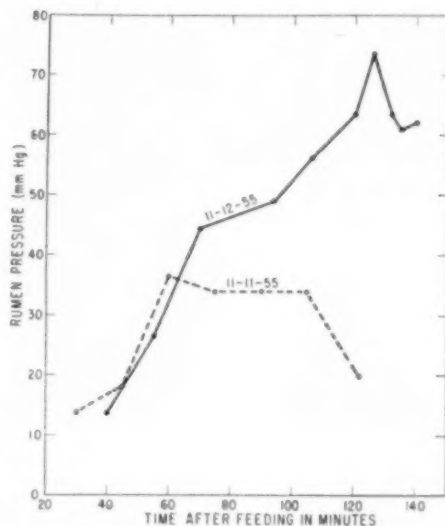
9:55—Restless; frequent urination and defecation.

From the Department of Animal Husbandry, Agricultural Experiment Station, College of Agriculture, University of California, Davis, in cooperation with the Agricultural Research Service, U.S. Department of Agriculture.



- 10:00—Started to lie down but resumed standing position immediately.  
10:02—Started to lie down again but got up at once.  
10:06—Stiffness of hindlegs evidenced in walking; lay down.  
10:07—Got up.  
10:14—49.2 mm. Hg rumen pressure; observations of the movement of the left flank indicated that ruminal motility stopped at about this time.  
10:15—Lay down; groaned.  
10:16—Standing, very restless, hindlegs slightly ataxic.  
10:17—Lay down, up immediately.  
10:18—Lay down, up immediately.  
10:24—Lay down, up immediately.  
10:26—56.4 mm. Hg rumen pressure.  
10:28—Extremely labored breathing.  
10:30—Lay down, rolled on side, up immediately.  
10:31—Lay down, rolled on side, up immediately.  
10:35—Plunged head in water trough.  
10:35—Lay down, up immediately; tongue blanched.  
10:40—63.6 mm. Hg rumen pressure.  
10:45—Began recording activities of cow with motion picture camera.  
10:46—73.7 mm. Hg rumen pressure.  
10:52—63.6 mm. Hg rumen pressure.  
10:55—61.0 mm. Hg rumen pressure.  
11:00—62.0 mm. Hg rumen pressure.  
11:08—Placed head and forefeet in tank, fell over on left side, breathing stopped within a minute, tongue cyanotic; upon cessation of breathing, cow was tipped slightly to her right side exposing her left flank to facilitate tapping with the trocar cannula.  
11:10—Pulse still evident; rumen punctured with trocar cannula, releasing large amount of free gas (estimated at several cubic feet); when most of free gas had escaped, rumen was opened with knife, a geyser of foamy ingesta about 3 feet in height gushed forth.  
11:12—Pulse stopped.

The after-feeding rumen pressures of cow 77, on the day of fatal bloating and on the preceding day, are shown (graph 1). On the afternoon of November 11 prior to bloating, she consumed 30 lb. of alfalfa tops, while on the morning in which fatal bloating occurred she consumed 29 lb. The initial rise in pressure was similar on the two days but, on the first day, the pressure was gradually relieved (presumably by belching) 60 minutes after feeding, with a rather rapid decrease in rumen pressure occurring from 105 to 120 minutes after feeding.



Graph 1—Rumen pressures of cow 77 after feeding on fresh alfalfa tops on the morning of the fatal bloating (solid line) and on the preceding afternoon (broken line).

#### DISCUSSION

Approximately 15 minutes preceding death (fig. 1), although labored breathing was evident, the appearance of the cow, as in many animals, gave little indication of the tremendous rumen pressure. The actual distention of the flank with increasing pressure varies greatly in different animals depending upon the looseness of the skin in the flank region.

As indicated above, the ingesta of this animal was extremely frothy, the foamy ingesta escaping after the rumen was slashed open with a knife (fig. 2). When the cow was first tapped in the paralumbar fossa with a trocar cannula, however, only



Fig. 1—Cow 77 approximately 15 minutes preceding death. Note that the rumen does not appear particularly distended, even though the rumen pressure exceeded 60 mm. Hg.





Fig. 2—The escape of foamy ingesta from cow 77 (lying on her sternum) after the rumen had been opened with a knife. The free gas had previously been allowed to escape by tapping the rumen in the paralumbar fossa with a trocar cannula.

free gas escaped. Had the rumen been opened with a knife at the start, one would undoubtedly have obtained the impression that no free gas was present as it would have escaped with the foamy ingesta. This case should help to clear up some differences in viewpoint regarding the importance of frothing in acute bloat on legumes.

During the past several years, we have produced several hundred cases of acute bloat on alfalfa pasture.<sup>2,4,5</sup> Heretofore, we have treated the bloat after it became severe either by drenching with turpentine or by relieving the pressure with a trocar cannula or stomach tube. In those instances in which the gas was relieved with the stomach tube or cannula, we invariably found free gas which led us to believe that frothing was not involved to any great extent in the type of bloat we were encountering. The present case gives evidence that free gas may be present, even though there is excessive frothing. We are of the opinion, therefore, that frothing is an important etiological factor in acute bloat on legume pasture.

Rumen motility apparently ceased about one hour after bloating began. Other data (unpublished) indicate that peristaltic movements of the rumen occur during early phases of acute bloat. Thus, it would appear that rumen paralysis is not a primary factor in acute bloat on legume pasture.

It is not certain, however, that frothing is the only factor involved. We have demonstrated that scabrous hays such as Sudan or oat hay are effective in preventing bloat.<sup>2</sup> It is possible that they act solely in reducing frothing, or it may be that their beneficial action also depends on assuring the normalcy of the eructation reflex. We have evidence<sup>6</sup> that belching is initiated regularly in bloated animals but that gas is not expelled, either because frothing prevents expulsion or because the eructation reflex is defective. It is hoped that future studies will clarify this point.

Comparison of the rumen pressures with those of another animal,<sup>1</sup> which collapsed but was saved by an attending veterinarian using a stomach tube, indicates, that the amount of pressure which will cause collapse may vary considerably in different individuals. The animal referred to collapsed after maintaining a pressure between 55.0 and 60.0 mm. Hg for approximately an hour, a pressure considerably less than in the case reported herein. Another animal spontaneously recovered from a rumen pressure of 60.0 mm. Hg.

#### SUMMARY

A cow died from acute bloat following consumption of 29 lb. of the upper 4 to 6 inches of fresh alfalfa plants. The cow had been fed the same diet on four previous days and had become bloated the preceding day but had recovered spontaneously.

On the day of death bloating occurred 40 minutes after feeding. Rumen pressures, as measured with a tympanometer, were: 44.5 mm. Hg at 30 minutes after bloating began, 73.7 mm. Hg at 86 minutes, receding to 62.0 mm. Hg. at 100 minutes (12 min. preceding death). Discomfort was evident 35 minutes after bloating began.

After death, tapping of the rumen with a trocar cannula showed that much free gas was present. Following release of the free gas, a larger opening into the rumen was made with a knife resulting in the gushing forth of a mass of foamy ingesta.

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## Ruminoreticular Studies in Cattle

### Part I—Movements

Observations were made, most of them in a practice, on the relationship between the reticular and ruminal movements in normal adult cattle so that the normal action could be compared with that in digestive disorders.

External examinations were made by placing one hand on the upper left flank to feel movements in the dorsal sac of the rumen while auscultating reticular movements with a stethoscope at the costochondral junction of the seventh rib (left), about 4 inches in front of the "milk well."

The cycle seemed to start with contraction of the reticulum, forcing ingesta over the ruminoreticular fold (a "mild swishing" sound lasting 2 or 3 seconds), followed by the sound of liquid ingesta returning to the reticulum, which was relaxing while the rumen contracted. The rumen then relaxed and, after a pause of about 30 seconds, it usually contracted and relaxed again without reticular sounds, thus completing the cycle. After a pause of 30 to 40 seconds, the next cycle would begin.

These movements are referred to as the "primary ruminal contraction" and the second or "extraruminal contraction." Only the latter was accompanied by eructation of gasses (belching). Double ruminal contraction of this nature occurred in 73.7 per cent of the cycles; there were two primary contractions to each extraruminal contraction in 16.0 per cent; and each primary contraction was followed by two successive extraruminal contractions in 10.3 per cent of the cycles. The second type (2 primary to 1 extraruminal contraction) occurred mostly when the stomach was comparatively empty.

Internal studies were made during rumenotomies on 70 animals, 1 of which had developed a ruminal fistula. The contents of the dorsal ruminal sacs were rel-

atively solid; of the ventral sacs, semi-liquid except in 2 cases of bloat in which the contents were uniformly frothy.

A hand in the reticulum, with the forearm resting on the transverse ruminoreticular fold, confirmed that the cycle started in the reticulum, but with a two-stage contraction. The first and weaker stage reduced the reticulum to about half of its static size then, after a slight pause and without relaxation, the forceful second-stage contraction pulled the ruminoreticular fold toward the median plane, and pulled the cardia downward, forcing liquid ingesta into the rumen. The reticulum then relaxed as the primary ruminal contraction occurred. (Ruminal action seemed to be total in nature, distinct from peristaltic action.)

Eructation failed to accompany the extraruminal contraction when gas could escape through the rumenotomy opening. In the 2 animals with frothy bloat, the primary contraction was regular but the extraruminal (belching) contraction was absent. During eructation, the cardia region was pulled upward, above the level of the stomach content.

The author suggests that bloat is probably due to failure of eructation and not to excessive gas formation. The absence of the extraruminal contraction and, therefore, of eructation could be due to inhibition or paralysis of a possible center governing these contractions. This absence may not be recognized clinically.—*Eric I. Williams, Vet. Rec., Dec. 3, 1955.*

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### Part II—Diagnosing Traumatic Gastritis

In a practice in Wales, in 1953 and 1954, traumatic reticulitis (41 cases) was diagnosed less often than parturient paresis (142), actonemia (120), or mastitis (462). In 64 operations on cattle, pieces of wire were recovered in 68 per cent, nails in 18 per cent. They were penetrating the floor of the reticulum in 62 per cent, the anterior wall in 29 per cent. Most cases occurred two to three months after parturition.

Some ruminoreticular motility was present in all these animals but was retarded in most, so reticular sounds were of little help in diagnosis. Pain reactions were elicited in all animals, but these also occurred in other disease conditions.

The most pathognomonic sign was a

"reticular grunt," which occurred with the primary ruminal movement but not with the extraruminal movement which is associated with eructation (see Part I, p. 535). Thus the reticular grunt indicated pain associated with contraction of the reticulum, which does not occur with the extraruminal contraction. This grunt has been consistently observed over a three-year period.—*Eric I. Williams, Vet. Rec., Dec. 10, 1955.*

[The above is an interesting observation. The author comments that few cases occur at the time of parturition. Since many observers in the past have most frequently diagnosed foreign body penetration shortly after parturition, it would seem to indicate that improved diagnostic methods now detect penetrations when they first cause symptoms, whereas previously the original attack was probably unnoticed or unrecognized until parturition stimulated further penetration.—Ed.]

### Homemade Oxygen Tent Equipment for Large Animal Therapy

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In October, 1952, a valuable 4-day-old Aberdeen Angus heifer was showing symptoms of the pneumonia-scur complex that can be such a problem in breeding herds. We had used whole dam's blood, *Escherichia coli* serum, sulfonamides, and penicillin-streptomycin therapy on this calf. During the next 24 hours, her temperature had dropped from 107.8 to 104.0 F. but a great deal of edema had developed in the lobules of the lungs, with hepatization of the lower areas of both lungs. The pulse rate was 120 and respiration fluctuated from 140 to 180 per minute. These symptoms and the past herd history on such calves indicated that we had little chance of saving this one unless we found a more effective manner of treatment.

We, therefore, had the calf and its dam brought to the clinic, the calf in an automobile and the dam in a truck. An airplane cowl cover, originally secured for its canvas value, was used to make a temporary box or tent for the calf. We then attached a cylinder of oxygen and placed a large

pail of crushed ice in the tent. Within a four-hour period, the calf's rate of respiration had dropped 40 per cent. However, the oxygen therapy was continued for an additional 48 hours and she eventually recovered.

This heifer later was first in her class as a 2-year-old at one of the leading mid-western state fairs.

We have had a number of other occasions to use this oxygen tent equipment, most frequently for calves. This is because peracute infections are much more common in the very young and oxygen, being an emergency type of therapy, is more often indicated. We have also used oxygen therapy as an adjunct to good postsurgery therapy.

In November, 1954, a valuable Shorthorn heifer, weighing 550 lb., suffered a compound fracture of the femur. After anesthetizing her with anavenol K,\* we performed an open reduction of the fracture, using a pinning and bar traction splint to immobilize the femur. Because of the excessive tissue damage and the duration of surgery, the heifer demonstrated all the signs of acute shock. She was placed in the oxygen tent with prompt, beneficial results.

Facts to be considered in the use of oxygen are as follows:

- 1) Oxygen is explosive and dangerous if adequate ventilation is not provided.
- 2) Crushed ice must be kept in the oxygen tent to provide for evaporation and to minimize the dehydrating effect of the oxygen.
- 3) A heavy ophthalmic ointment must be placed in the eyes of the animal at least three times daily while using the oxygen to prevent corneal damage.
- 4) Oxygen therapy is a valuable adjunct but it will not supplant other accepted therapy, particularly nursing care.

\*Anavenol K is produced by Imperial Chemicals Ltd., Manchester, England, and is distributed in this country by Fort Dodge Laboratories, Inc., Fort Dodge, Iowa.

*Eczema from Handling Antibiotics.*—Persons who handle penicillin and streptomycin are subject to the occupational hazard of dermatitis. This allergy was overcome in five persons by the subcutaneous injection of minute, tolerated doses of the antibiotic. After daily treatment for weeks or months, a relative lasting tolerance may be produced.—*Brit. M. J., March 24, 1956.*

Dr. Nelson is a general practitioner in DeKalb, Ill.

# Erysipelothrix Septicemia in the Porpoise

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INFECTION with *Erysipelothrix rhusiopathiae* has been reported in swine, sheep, cattle, reindeer, kangaroos, wild boars, horses, dogs, guinea pigs, mice, chickens, turkeys, guinea fowl, ducks, parrots, geese, pigeons, and man.<sup>1-3</sup> An *Erysipelothrix* organism recovered from mice has been called *Erysipelothrix murisepticus* and one recovered from man, *Erysipelothrix erysipeloides*. Studies made on the relationships of these species of *Erysipelothrix* have shown that they are identical with *Ery. rhusiopathiae*, the organism of swine erysipelas.<sup>3</sup>

*Erysipelothrix rhusiopathiae* has also been recovered from decaying plant and animal tissue and from the slime on the bodies of both fresh and salt water fish. Infection in man has been reported to occur not only from contact with swine and other farm animals but also from contact with fish and from the bites of crabs.<sup>4</sup> The purpose of this article is to report *Ery. rhusiopathiae* septicemia in 3 bottlenosed porpoises (dolphins), *Tursiops truncatus*, and in 1 spotted porpoise, *Stenella plagiodon*. The animals died while in captivity at Marine Studios, Inc., Marineland, Fla. They subsisted entirely on commercial frozen fish and rarely devoured the smaller live fish kept in the tank with them. Infection from the live fish seemed unlikely. The period of noticeable illness or recent abnormal behavior before death was 20 minutes in 1 animal and 36 hours in the second. The third porpoise was found dead one morning. No clinical history was available on the fourth animal.

## PATHOLOGICAL DIAGNOSIS

The initial approach to the problem was made by histopathological examination of fixed tissues, forwarded from the Marineland Research Laboratory, from 3 of the 4 affected porpoises, including the *S. plagiodon*. In no instance did routine histological

sections stained with hematoxylin and eosin give any definite indication of the cause of death.

In 1 animal, there were hemorrhages in sections of the second and third lobes of the stomach, adrenal tissue, and a thoracic lymph node. The splenic tissue appeared congested histologically although the organ was reported to have been grossly normal.

In the second animal, sections of lung tissue showed congestion, edema, and some hemorrhage. A section of lymph node showed considerable hemorrhage, but the splenic tissue was not congested. Sections of the liver showed an appreciable amount of congestive cirrhosis but not enough liver damage to account for the death of the animal.

In the third animal, the lesions recognized on routine histopathological examination were slight to moderate portal cirrhosis of the liver and an abscess in the ventral portion of the left lung (reported

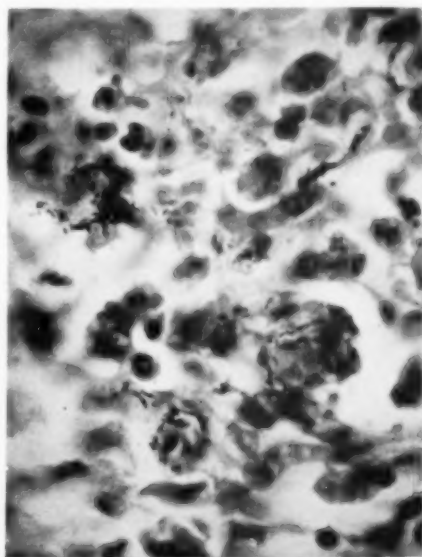


Fig. 1—Histological section of submucosal lymphoid follicle in large intestine of a porpoise showing *Erysipelothrix rhusiopathiae* in tissue. Gram stain with hematoxylin and eosin;  $\times 900$ .

From the School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn. Dr. Seibold is professor of pathology and Dr. Neal is assistant professor of bacteriology.

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on gross examination to be 2 cm. in diameter). There also were congestion and edema of the lung tissue. Death of the animal could not be attributed to the moderate degree of portal cirrhosis and the small pulmonary abscess, although these lesions doubtlessly were responsible for loss of weight and listlessness noticed during the previous months.

No definite clue to the cause of death of these animals was obtained until a small lesion, apparently of parasitic origin, in the lung tissue of 1 porpoise was checked histologically for bacteria, using Gram's stain and Ziehl-Nielsen's acid-fast stain. No bacteria were found in the necrotic center of the lesion, but the surrounding tissue contained numerous small, slender, rod-shaped, gram-positive bacteria. Some of the organisms were slightly bent. They were not acid-fast. Further study of the tissues of this animal with Gram's stain revealed large numbers of the same type of organisms in the spleen, the sinusoids and Kupffer cells of the liver, the capillary blood vessels of the stomach, and in the intestinal mucosa. Similar observations were then made on the tissues of the other 2 porpoises. A histopathological diagnosis of acute bacterial septicemia was made.

The idea that this was *Ery. rhusiopathiae* septicemia was entertained on the basis of the morphology of the organism, the histological resemblance to swine erysipelas infection in laboratory animals, and the fact that the porpoise is a mammal located in an environment where contact with the organism may occur.

Information received with the fixed tissues indicated that the head of 1 porpoise (*T. truncatus*) had been preserved frozen for neurological studies. Accordingly, a request was made to obtain samples of unfixed tissue from the frozen head for bacteriological examination. Appropriate specimens were obtained from this animal and also from the fourth porpoise which had not been examined histologically.

#### BACTERIOLOGICAL DIAGNOSIS

The first specimen examined bacteriologically was a piece of muscle from the fourth animal. A smear made from the tissue and stained by Gram's method showed numerous small gram-positive bacilli. The tissue was ground in saline and 1 drop of the fluid suspension was inoculated subcutaneously into each of 3 white

mice, and approximately 0.1 ml. was inoculated into the breast muscle of each of 2 pigeons. All of these animals died within 72 hours. The heart blood of each was cultured by streaking on 10 per cent bovine blood-agar. Within 24 hours, numerous pinpoint colonies appeared along the lines of inoculation. Smears from the colonies disclosed small gram-positive bacilli morphologically similar to those in initial smears from the porpoise tissue. The organism was nonmotile and produced acid but no gas from lactose, galactose, glucose, and mannose. Maltose, arabinose, xylose, sucrose, trehalose, salicin, inulin, mannitol, sorbitol, and inositol were not fermented. Hydrogen sulfide was produced in Difco SIM medium. A delicate growth resembling a test tube brush was produced in gelatin stab incubated at 25 C. The morphology, staining, cultural characteristics, and pathogenicity for laboratory animals were consistent with those described<sup>5</sup> for *Ery. rhusiopathiae*.

The second specimen, obtained from the head of one of the porpoises examined histologically, was handled in essentially the same way as described above, except that 6 white mice but no pigeons were inoculated. All of the mice died 48 to 72 hours after inoculation. A pure culture characteristic of *Ery. rhusiopathiae* and identical with the organism described above was isolated from the heart blood of each mouse.

#### SUMMARY

A histopathological diagnosis of acute bacterial septicemia was made on 2 porpoises, *Tursiops truncatus*, and 1 porpoise, *Stenella plagiodon*, which died in captivity. Numerous gram-positive organisms morphologically typical of *Erysipelothrix rhusiopathiae* were demonstrated in the tissues of these animals. Unfixed tissues, obtained from 1 of these animals and from a fourth porpoise (both *T. truncatus*) which died but was not examined histologically, yielded *Ery. rhusiopathiae* in pure culture.

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## Recovery of a Cow with Tetanus

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On the morning of June 26, 1955, a call came to remove the fetal membrane from a 6-year-old Holstein-Friesian cow, fresh three days. As all of the membrane could not be removed, four sulfonamide-urea tablets were placed in the uterus, 10 mg. of E.C.P. was given, and the owner was instructed to call in three days if the cow failed to "clean." On July 9, he reported that she was not eating well. Examination revealed that the cervix would admit two fingers, so four more sulfonamide-urea tablets were inserted into the uterus. On rectal examination, the uterus could be pulled into the pelvic cavity and seemed to be contracting normally, although a reddish discharge was present. The urine-ketone test was positive, so the cow was treated with 500 cc. of 50 per cent dextrose and 300 units of ACTH. Five days later, the cow was reported to have responded at first, but now was not eating and was walking stiffly. Since the farm was 15 miles away

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from the office, the cow was brought to the hospital to be examined for foreign body gastritis.

At the hospital, the metal detector registered positive. The total leukocyte count was: 13,000 per 1 cmm. with a differential count of:

Lymphocytes	18 per cent
Neutrophils	75 per cent
Eosinophils	6 per cent
Monocytes	1 per cent

Other findings were: urine, negative for ketones; temperature, 102.4 F.; feces, hard; back, arched; walked stiff-legged with the tailhead raised; nictitating membrane, frequently protruding; all muscles unusually firm; anorexia complete; only slight peristalsis; and a "tucked-up" abdomen. Four million units of penicillin and 5 Gm. of streptomycin were injected intramuscularly and a 10 per cent dextrose-saline solution was given by the intravenous-drip method.

The tentative diagnosis was tetanus and traumatic reticulitis. However, since tetanus is uncommon in cattle and because of the possibility that the symptoms were caused by painful reticulitis, it was decided to perform a rumenotomy. Surgery (July 14) revealed the presence of loose wires and metal filings in the reticulum but no adhesions or penetrating objects. When notified that his cow had tetanus with an unfavorable prognosis, the owner told us to do as we pleased with the animal.

Therefore, 3,000,000 units of penicillin per day was given for six days, then 6,000,000 units the next four days—a total of 46,000,000 units. The intravenous drip was discontinued after the rumenotomy. After a few days, the cow bloated so badly

Fig. 1—Cow with tetanus following parturition and removal of fetal membrane. Notice the attitude of the body and ears. (Unfortunately, the face and tail are not shown.)





that she had to be relieved by stomach tube about three times a day. Gradually the tympanites diminished in severity, but she had to be relieved at least once a day throughout her 30-day stay in the hospital. The stomach tube was used to give stomachics at the first treatment for bloat and daily to give 9 gal. of water. She lost a great deal of weight. Around August 7, she started to become relaxed and to show some interest in feed. Being unable to chew or swallow, she merely picked up hay in her mouth and "muzzled" the grain. Gradually, she began to chew and swallow and a week later she was returned to the farm. Her milk production increased from a few drops to 20 lb. a day where it leveled off. A month after discharge, she was in fairly good condition.

#### DISCUSSION

We considered this an interesting experiment. The method of infection is unknown, but the literature cites examples of post-partum tetanus as the result of uterine infection. Since the cost of treatment had to be considered, expensive drugs and antitoxin were not used.

While it is difficult to evaluate the therapeutic measures taken, especially the penicillin therapy, it would seem that the maintenance of the fluid level and the release of gas did most to keep the cow alive. Feces were scarce, but urination seemed to remain fairly constant. The status of her electrolyte balance was not determined.

#### SUMMARY

A case diagnosed as tetanus in a cow is reported. Symptoms appeared about 16 days after calving and continued for several weeks. She was unable to eat or swallow and was constantly bloating for most of the 30 days she was hospitalized. The principal therapy was the use of a stomach tube to remove gas and to give 9 gal. of water daily. Complete recovery appeared evident about three months after calving.

[See editorial on tetanus, JOURNAL, July, 1954, page 70. Cattle seem relatively resistant to tetanus. Many recover with no treatment but undoubtedly more would if cared for as this cow was.—ED.]

**Thyroid Size and Egg Production.**—To test the assumption that large thyroid glands are associated with increased hatchability, growth, and egg production, chick-

ens with large and small thyroid glands have been grouped at Beltsville, Md. Results may prove of value in the future selection of breeding animals.—*Agric. Res., March, 1956.*

#### Investigations of Bovine Bloat

An agent (flavone quercetin) which inhibits the activity of smooth muscles, when given orally or intravenously, did not produce bloat even in the presence of cyanide. The bloat-provoking factor apparently is not a saponin.

Two household detergents and a number of surface-active agents did not relieve bloat, but foam-breaking compounds were effective.

Saliva from cows did not prevent bloat in sheep.—*Vet. Bull., March, 1956.*

#### Value of Early Therapy for Anthrax

Guinea pigs experimentally infected with *Bacillus anthracis* could be saved if the bacteremia could be eliminated with streptomycin before the organisms increased to 30,000,000/ml. of blood, which is about 0.3 per cent of the proliferation which occurred at the time of death in untreated animals. Beyond that level, death occurred even when no active infection persisted after the treatment, apparently because of irreparable damage to the kidneys.—*Vet. Bull., March, 1956.*

**Penicillin Said to Prevent Bloat.**—Giving penicillin (50 mg.) to yearling steers which regularly bloated on Ladino clover pasture is reported, by the Mississippi Experiment Station, to prevent bloating for 36 to 72 hours. Heavier doses tended to cause diarrhea. When given in the afternoon, it was effective by the next morning. Other antibiotics tested were ineffective.—*AFMA Nutr. Abstr., March, 1956.*

#### Neomycin Safe when Given per Os

In an item, "Neomycin Nephropathy in Man," in the April 1, 1956, JOURNAL, p. 356, it was not indicated that the neomycin, believed responsible for a man's death, had been given parenterally (0.25 Gm. intramuscularly 4 times daily for 19 days). When given orally, little, if any, of the drug is absorbed.

## Rapid Antibiotic-Sensitivity Testing

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Recent experiences with antibiotic-resistant organisms in mastitis, diarrheas, and other diseases have indicated the desirability of a rapid antibiotic-sensitivity test. Such a test has been described by Jackson *et al.*<sup>1</sup> This test with slight modification has been adopted in our laboratory and found to be simple and valuable.

The technique to be described is one that is entirely practical for a practitioner to use in his office laboratory. It will require a small investment in bacteriological equipment and some training of personnel, but the results will be well worth the investment in time and money.

**Technique.**—Blood-agar plates prepared from a blood-agar base (Difco) containing 20.0 per cent citrated sheep, cow, or dog blood are prepared and kept on hand. The original technique called for human blood, but blood from the above animals has been found to work satisfactorily. If milk sam-

ples are to be tested, they are incubated overnight at 37 C. They can be examined fresh if the milk contains a large number of the organisms as indicated by thick milk or other alterations.

Tubes containing 5 ml. of brain-heart infusion agar (Difco) plus 0.8 per cent dextrose are previously prepared and sterilized. At the time of use, the agar is melted by placing it in boiling water and allowing it to cool to about 50 C. (120 F.). Then 1 ml. of the incubated milk or fresh fecal suspension is added to the 5 ml. of melted agar and poured on the surface of the previously prepared blood-agar plates. Difco antibiotic-sensitivity discs\* are placed on the surface of the agar after it has hardened. The plates are then placed in an incubator and examined at two, three, and four hours.

The growth of the organisms in the surface agar produces relatively intense reducing conditions within the medium, which causes a reduction of the hemoglobin in the blood-agar and a consequent darkening of the medium. In case of inhibition of bacterial growth, the hemoglobin is not darkened but remains a bright red. Inhibition of the growth is detected by the zones of bright red around the antibiotic discs (fig. 1).

Some organisms grow more slowly than others and will not produce sufficient

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This article is a slightly revised version of the one which appeared in the Georgia Veterinarian, Sept.-Oct., 1955, pp. 15, 20-21.

<sup>1</sup>Jackson, J. L. W., Dye, W. E., and Mitchell, Roland B.: Use of Hemoglobin Indicator for Rapid Method of Determining Antibiotic Sensitivity of Microorganisms. Texas Rep. and Biol. and Med., 12, (1954): 171-172.

\*Antibiotic-sensitivity discs and the mediums mentioned are available from Difco Laboratories, Detroit 1, Mich.

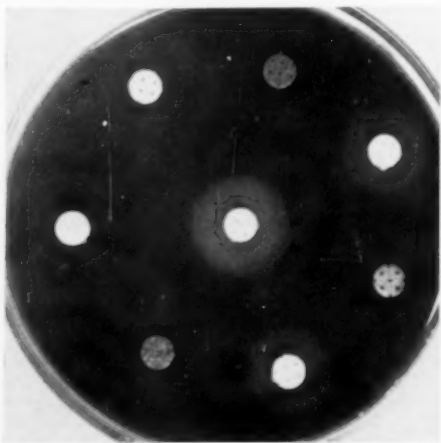


Fig. 1—Antibiotic-sensitivity test at three hours. Note light zones around discs indicating sensitivity.



Fig. 2—Antibiotic-sensitivity test, using overnight incubation of a pure culture streaked on agar surface.

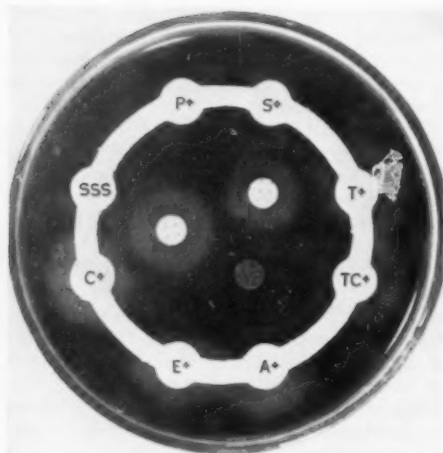


Fig. 3—Antibiotic-sensitivity test at three hours, using ring and disc types of tests.

growth to permit reading the test in four hours. In case the number of bacteria is not sufficient to produce a uniform reduction of the hemoglobin, it may be necessary to allow the incubation to proceed for 18 to 24 hours or longer or to adopt the following technique.

**Modification of Technique.**—A further modification of this technique that has proved useful in our laboratory has been the testing of cultures of bacteria that have been obtained from a pure culture in broth. In this case, a blood-agar plate is seeded heavily on the surface with culture. When the moisture from this inoculation has been absorbed into the medium, the antibiotic-sensitivity discs are placed on the surface and the plate incubated for 24 hours. This is one of the usual techniques of antibiotic-sensitivity testing. Sensitivity to the antibiotic is indicated by a clear zone (lack of growth) around the disc (fig. 2).

Another type of sensitivity disc, possibly more convenient to handle (fig. 3), is in the form of a wreath containing common antibiotics.†

†This disc is obtainable from National Bio-Test, Inc., Box 1713, Benson Station, Omaha, Neb.

Leptospirosis was fatal to a 2-year-old horse (in France) which showed meningo-encephalitis and jaundice. *Leptospira icterohaemorrhagiae* was isolated.—*Vet. Bull., March, 1956.*

## Visceral Lymphomatosis Transmitted in Newcastle Disease Vaccines

The possibility of transmitting visceral lymphomatosis by live virus Newcastle disease vaccines was ascertained in experiments involving 1,103 chickens. In two experiments, chickens that had received vaccines prepared from embryonating eggs, laid by hens that shed the visceral lymphomatosis virus, had a significantly greater incidence of visceral lymphomatosis than nonvaccinated controls or chickens receiving vaccine prepared from eggs laid by hens of an isolated population that had been shown not to shed the virus.

In two other experiments in which commercial vaccines were tested, the prevalence of visceral lymphomatosis in one of the vaccinated lots was significantly higher than that in the nonvaccinated controls.

The data indicate that ovarian transmission of visceral lymphomatosis virus may result in sufficient contamination of live virus Newcastle disease vaccines to result in a significant transmission of visceral lymphomatosis in highly susceptible stock. Neurolymphomatosis was not transmitted by live virus Newcastle disease vaccines under the conditions in which the transmission of visceral lymphomatosis occurred.—[B. R. Burmester, C. H. Cunningham, G. E. Cottral, R. C. Belding, and R. F. Gentry: *The Transmission of Visceral Lymphomatosis with Live Virus Newcastle Disease Vaccines*. *Am. J. Vet. Res.*, 17, (April, 1956): 283-289.]

## Aujesky's Disease and Chlortetracycline

When Aujesky's virus (rabbit brain emulsion) was incubated with chlortetracycline (50 mg./ml.) for 30 minutes, it failed to infect embryonating eggs. A rabbit remained healthy when simultaneously given the virus subcutaneously and chlortetracycline (10 mg./kg.) intravenously, while 2 rabbits, not treated until clinical signs appeared, died.—*Vet. Bull., March, 1956.*

Benzathine penicillin G has been exempted, by the Food and Drug Administration, from certification if it is properly labeled as being for veterinary use.—*Fed. Reg., March 28, 1956.*

### Acute and Chronic Teschen Disease

Histological changes of the central nervous system in 26 pigs experimentally infected with Teschen disease virus (21 intranasally, 4 intracerebrally, and 1 by contact) are reported. Of the 26, 11 developed the acute form, 8 the chronic form, and 7 recovered. Animals with acute in-oid infiltration, particularly in the gray fectio showed marked perivascular lymph-substance of the cord and in the base of the cerebellum. Pigs with chronic infection showed similar but more marked lesions. The recovered animals showed irregular thickening of the vascular adventitia; transitional forms of lymphocytes in the ventral horn of the spinal cord and in the base of the cerebellum; but no lesions in the pia mater and in the cerebral cortex.—*Vet. Bull., March, 1956.*

### Turkey Ornithosis in Oregon

Thirty suspected human cases of psittacosis associated with infected turkeys were recently reported from Oregon. A high turkey mortality occurred in February on two farms in northwestern Oregon. Thirty of 32 blood specimens from the two flocks showed a significant complement-fixation titer for psittacosis. The 30 affected human beings were among employees of these farms or at plants where dead turkeys from these farms were handled. Two of the 30 persons died. Specimen examinations and serological tests are being conducted.—*U.S. Pub. Health Serv., March 15, 1956.*

### Newcastle Disease and Infectious Bronchitis Virus Interference

Susceptible chicks were exposed to mixtures of viruses in which the concentration of Newcastle disease virus was varied and the infectious bronchitis concentration remained constant. Simultaneous administration of infectious bronchitis virus interfered with the action of Newcastle disease virus when the infectious bronchitis virus was in excess. Administration of infectious bronchitis virus a week preceding the Newcastle disease virus produced no apparent interference.

Newcastle disease virus was more active when diluted with normal allantoamniotic fluid than with nutrient broth. Saline, as

a diluent, appeared to have a deleterious effect on the Newcastle disease virus.—[*L. E. Hanson, F. H. White, and J. O. Alberts: Interference Between Newcastle Disease and Infectious Bronchitis Viruses. Am. J. Vet. Res., 17, (April, 1956): 294-298.*]

### Methods of Erysipelas Immunization

The official record for 1950 and 1951, in Poland, showed 114 breaks in 1,000,000 pigs (0.0114%) with adsorbate vaccine the first year, 74 breaks in 1,100,000 pigs (0.0068%) with simultaneous serum and virulent culture the next year.—*Vet. Bull., March, 1956.*

[Note: Since swine erysipelas is remarkably unpredictable and apt to be cyclic, comparisons made in different years may be decidedly misleading.—Ed.]

### Erysipelas Culture-Serum Mixtures.—

Following poor results in vaccinating against erysipelas with serum-culture mixtures, it was found, in Poland, that if the mixture was not used within three hours, the virulence of the organisms was diminished by the phenol in the serum.—*Vet. Bull., March, 1956.*

### Swine Erysipelas Studies

Factors affecting the incidence of swine erysipelas were studied in Poland. Environmental factors seemed of less importance than the presence of the organism in the pigsty. Biennial disinfection of these quarters for three years resulted in a marked reduction in the disease.

*Erysipelothrix rhusiopathiae* was found in the tonsils of 82 per cent of 274 healthy pigs. Of 51 strains isolated, 20 were type A, 1 was type B, and 26 were type N; the others were unclassified.

The percentage of carriers was not affected by vaccination with either avirulent or live vaccines. The percentage of carriers seemed to have no relationship to the percentage which developed erysipelas.

In mice, transmission of the infection by contact occurred only at temperatures above 20 C. (68 F.).—*Vet. Bull., March, 1956.*

# A System of Testing Vision in Animals

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AS PRACTICING veterinarians, we are often asked to assess the visual function of an animal. The fact that our patients are dumb places us at a distinct disadvantage because subjective methods are clearly not adaptable to the animal. The veterinarian is dependent upon objective signs and reflexes to estimate vision. This is not as inadequate as it sounds, for there are certain reflex phenomena that are as readily elicited in animals as in man. Moreover, the basic simplicity of the animal is an advantage in one respect. Animals do not intentionally mislead the doctor.

Test patterns, which are used for children or the mentally retarded, can also be used for testing dogs, cats, and some of the large domestic animals. To use this method, figures or lines are mounted or drawn on a revolving drum before which the animal is stationed. This test elicits physiological or rhythmic nystagmus, a response occurring in animals as well as man. It depends on the tendency of the eyes to follow any visible pattern to the edge of the drum. The eyes then jerk back to the original position, whereupon the phase repeats itself. A good example of rhythmic nystagmus occurs when we are on a moving train. It is natural to focus on a tree or house in the distance and to follow the object with our eyes until we can no longer watch it comfortably. The eyes then return to the original position, fix on a new object, and the process is repeated.

When animals follow a moving test pattern, it is obvious that they can see it. A test pattern of decreasing size may be used to determine the limits of retinal resolving power. This is a good laboratory exercise but too time-consuming for routine clinical testing. The procedure outlined below, therefore, is suggested as more practical and one which can be performed by a veterinarian in his office.

## PREPARATION

Dogs and cats should be held on a table in a comfortable position. Larger animals

should be examined in a doorway and so controlled that each eye can be held toward the light in turn. There should be some provision for subduing the general illumination of the room. Any examining room that customarily needs artificial illumination for examination is adequate. A bright light source, such as a pencil light or flashlight is needed.

## THE CORNEAL REFLEX

If the cornea is irritated, the lids promptly close. This is an involuntary reflex which depends on the sensory fibers of the trigeminal nerve supplying the cornea and periorbital skin and lids, the nerve pathways, and the orbicularis oculi which is the effector structure closing the lids.

The latter muscle is under motor control of the facial nerve. A lesion in this pathway may interfere with the blink reflex that is expected in the normal animal. To test for the presence of the corneal reflex, air is blown onto the cornea from the temporal aspect. A small rubber bulb syringe is effective in eliciting the reflex. Care should be taken to remain outside the pupillary field so that the bulb can not be seen by the animal.

Impairment of the corneal reflex occurs in stroke or facial paralysis from other causes. Occasional cases of otitis externa or otitis media may cause temporary facial paralysis. The proximity of the external acoustic meatus to the stylomastoid foramen, which conducts the facial nerve to the skull exterior, is probably related in these cases.

Loss of the corneal reflex can lead to drying of the cornea from constant exposure, with subsequent keratitis and ulceration. This condition can be ameliorated by partial tarsorrhaphy which enables the animal to keep the cornea moist.

In the brachycephalic breeds, such as Pekingese and Pugs, the cornea may be relatively insensitive, and it is not always possible to demonstrate the corneal reflex unless the cornea is stimulated vigorously.

## THE RETINAL REFLEX

The sudden approach of an object to

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ward the eyes also results in blinking. However, this is a pure retinal reflex, for the sensory fibers of the trigeminal nerve are not involved. This reflex is a protective mechanism which depends upon the ability of the retina to distinguish the oncoming object, the nerve tracts to transmit the impulse, and the action of the palpebral branch of the facial nerve to effect lid closure. It is the same response that is observed in the corneal reflex but is caused by an entirely different stimulus.

In testing an animal for vision, it is common practice for horsemen to pass the hand rapidly back and forth in front of the horse's eyes. A blink reflex is considered to be evidence of satisfactory vision. This test is not at all conclusive because blinking will occur in an eye blind from any disease which has left the corneal reflex intact. Blinking in such animals is caused by the air current which impinges on sensory fibers of the trigeminal nerve and elicits a corneal reflex.

The retinal reflex is elicited by interposing a translucent sheet of plastic between the observer and the patient. The opposite eye is closed and pellets of cotton are thrown against the plastic. If the retina can distinguish the pellets and the nerve tracts are sound, the animal will blink. Such a reflex can only be retinal because there has been no stimulation of cornea, lids, or periorbital skin. If a blink does not follow, the eye is either unable to distinguish the pellet, or the lids are paralyzed. Absence or presence of the corneal reflex will quickly distinguish between the two possibilities.

#### THE PUPILLARY LIGHT REFLEX

In addition to the corneal and retinal reflexes, there is a series of reflexes to light that may reveal the location of a lesion in the visual tract. We all know that the pupil constricts when the eye is exposed to light.

With a pencil light, each eye is tested while the opposite eye is closed. In a normal eye, the pupil reacts promptly and constriction of the pupil results because the retina is sensitive to the intensity of light experienced. The optic nerves and tracts convey the impulse to the brain and the oculomotor nerve stimulates the tiny sphincter pupillae, the end organ of this reflex arc. This is called a direct reflex because the

constriction is observed in the eye exposed to light.

If the left eye is observed while the right eye is illuminated, a constriction is also observed. Both pupils have responded, although only one was illuminated. The reflex observed in the unilluminated eye is called indirect, crossed, or consensual. In testing for the direct reflex, therefore, it is necessary to occlude the opposite eye to avoid eliciting a consensual reflex.

In an eye blind from optic atrophy, or any retinal blindness, the direct reflex can not be elicited. However, the pupillary light reflex can also be absent in a sighted eye. Only after testing for the consensual reflex is it possible to arrive at the correct conclusion.

Suppose, for example, that a dog's vision is to be tested. The animal has useful vision and can run and play without difficulty. The right eye is first illuminated while the left eye is closed. The pupil constricts promptly. When the process is repeated on the left eye, there is no constriction. The conclusion is that the left eye is blind or that its oculomotor enervation is disturbed.

In order to distinguish which factor is responsible, the physiological fact of the consensual reflex is now employed. The left eye is observed while the right eye is illuminated and pupillary constriction occurs. This demonstrates that the oculomotor enervation of the left eye is intact. The conclusion is that the left eye is blind. When the right eye is observed while the left is illuminated, the right pupil does not constrict because the left eye is blind and, therefore, unable to initiate the consensual reflex.

In case of bilateral blindness there is neither a direct nor a consensual reflex. (When observing the pupillary responses in horses and cattle, the vertical diameter change is more apparent than the horizontal.)

#### PARALYTIC MYDRIASIS

The pupillary reflexes may be absent although the animal has sight. In this condition of paralytic mydriasis, the animal has satisfactory vision, but the pupils fail to respond to light. In these cases, which are usually bilateral, the corneal and retinal reflexes are normal but the pupil remains widely dilated; and the iris may be withdrawn beyond the scleral insertion. This



condition is caused by a central or peripheral lesion of the oculomotor nerve which terminates in the iris sphincter muscle.

Animals with paralytic mydriasis are not seriously handicapped for, in being deprived of accommodation, they have lost only a small part of the mechanics of vision. At best, the dog has only two diopters of accommodation and does not greatly miss this slight loss of focusing power. This is a much more serious matter in man where the eye possesses seven or more diopters of accommodation.

Animals with paralytic mydriasis make perfectly good pets and can play reasonably well. The added light admitted to the retina in sunlight could conceivably be dazzling but such animals do not exhibit photophobia. It is of interest that the animals observed do not suffer from ptosis or disturbance of ocular mobility. Branches of the oculomotor nerve supply motor fibers to the levator muscle of the upper eyelid and to several of the extraocular muscles but these motor functions of the nerve have been spared in every case we have seen.

#### OBSERVATION

It is extremely useful to observe the animal in unaccustomed surroundings while each eye is occluded in turn. It is usually possible to establish by this test alone which eye is affected.

Adding the sum of information obtained from testing corneal, retinal, and pupillary light reflexes, the lesion can usually be located, if one exists.

#### CONCLUSION

Several practical methods for testing the vision of animals are presented. These methods, which utilize objective signs and reflexes, indicate that testing animal vision can be a simple office procedure.

*Parathion Poisoning in Cattle.*—Necropsy of 2 cows which died suddenly, in Italy, revealed petechial hemorrhages of the viscera and muscles, degeneration of the liver and kidneys, and congestion of the mucous membranes. Parathion was found in the viscera.—*Vet. Bull., March, 1956.*

*Erysipelothrix rhusiopathiae*-like organisms were isolated from aborted fetuses of 3 sows which showed no signs of infection.—*Vet. Bull., March, 1956.*

#### Leukopenia and Cholera Vaccination

To determine the degree of leukopenia which follows the vaccination of swine for hog cholera and which is believed responsible for many undesirable "reactions," several groups of 10 pigs each were vaccinated by common procedures.

With serum and virulent virus, the leukocyte count dropped to 50 per cent by the fifth day, then recovered; with virus alone, it dropped to 35 per cent by the fourth day with little recovery; with modified vaccine of porcine or tissue origin plus serum, it dropped to 60 to 70 per cent on the fifth day before recovering; with modified virus of rabbits or porcine origin without serum, to 55 to 65 per cent on the fifth or sixth day; and with the latter vaccines plus serum, to about 77 per cent on the fifth day before recovering.—*Corn States Needle, Spring, 1956.*

#### Pneumotropic Virus of Pigs

A pneumotropic virus pathogenic to young pigs and mice but not to chickens and rabbits was isolated for the first time in Poland. Serologically, it was related to the influenza virus of pigs but differed from the virus of human influenza. The presence of a Newcastle disease virus in the lungs and nasopharyngeal washings of pigs affected with influenza was suspected.—*Vet. Bull., March, 1956.*

#### First Case of Scrapie in Georgia

A Suffolk ram, purchased in Tennessee two years previously, became blind, was nervous, and had a temperature of 102.0 to 104.5 F., but ate well. These symptoms were followed by signs of intense itching, progressive emaciation, then poor coordination. When destroyed for diagnosis, sections of the brain and spinal cord showed typical signs of scrapie. The flock of 750 was slaughtered and 35 other flocks, to which breeding stock was traced, are under quarantine and must remain under surveillance for three years.—*Georgia Vet., Jan.-Feb., 1956.*

*Tetanus Antitoxin in Healthy Cattle.*—Of 100 healthy ranch cattle examined for tetanus antitoxin in Argentina, 15 showed significant titers. These were more commonly found in animals from tetanus-infected areas.—*Vet. Bull., March, 1956.*

# Hematology as an Aid in the Diagnosis of Poultry Diseases

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THE BLOOD picture of poultry has generally been overlooked in routine diagnostic work because of difficulties encountered in determinations on avian blood. It was felt that several simple observations, requiring only a few minutes, could be made from the blood which often would be valuable in reaching a correct diagnosis. There is, however, considerable variation in the blood picture of fowl due to age, sex, and environmental conditions.

White and red blood cell determinations by use of counting chambers are time consuming and avian white cell counts are somewhat complex. One may obtain a good idea of the relative numbers of red and white blood cells by observing the packed red cell volume and the depth of the buffy coat in a Wintrobe hematocrit tube. This requires a minimum of time and experience.

As a routine procedure, it was decided to: (1) fill an hematocrit tube and observe the packed cell volume and buffy coat; (2) examine a blood smear; and (3) make any serological tests indicated.

## OBTAINING THE BLOOD SAMPLE

A sample of blood can be collected from the heart easily and without assistance before the bird is killed. To prevent the bird from struggling, the legs and tips of the wing feathers should be grasped in the left hand. The sternum of the bird should be dipped in a pan of water containing a quaternary ammonium compound, to wet the feathers so that they can be parted and to disinfect the area. The bird should be held on its back on the edge of a table with the head hanging over (fig. 1). For adult birds, a 2- or 3-inch, 18-gauge needle is directed through the angle formed by



Fig. 1—Technique for obtaining a blood sample from a hen for hematological examinations and culture.

the clavicles and backward just off the sternum. The needle should pass into the heart or large vessels and, with slight negative pressure, the syringe will fill. The blood is discharged into a tube or vial containing oxalate crystals and mixed by inverting gently\*.

## THE HEMATOCRIT TEST

A hematocrit tube can be filled and placed in a centrifuge while the necropsy is being performed. The packed volume of the erythrocytes can be read directly from the tube. It will reveal most anemias. Values as low as 6.0 per cent have been observed in this laboratory.

The buffy coat immediately above the erythrocytes is formed by leukocytes and thrombocytes (fig. 2). It gives an estimate of the number of white blood cells but not as accurately as the packed cell volume does of the red blood cells. The thrombo-

From the Department of Animal Diseases, Georgia Coastal Plain Experiment Station, Tifton. Published with the approval of the resident director as journal series paper No. 36.

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The author thanks the Sunnyland Poultry Plant of Thomasville, Ga., for allowing him to collect the blood samples, and also Dr. Wm. L. Sippel, head, Department of Animal Diseases, Georgia Coastal Plain Experiment Station, Tifton, for his help and guidance in the preparation of this paper.

\*Oxalate tubes can be prepared by placing 0.15 cc. (3 drops) of a 10.0 per cent solution containing 6 parts ammonium oxalate and 4 parts potassium oxalate in a small test tube and evaporating in an oven at a low temperature. This is the proper concentration for 5.0 cc. of blood.

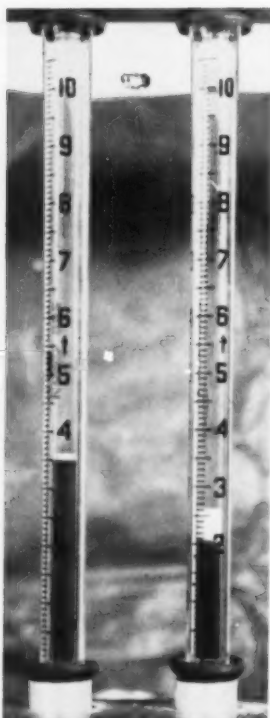


Fig. 2—Hematocrit tubes showing normal buffy coat and slightly high packed cell volume (left) and increased buffy coat and low packed cell volume (right).

cytes are large in chickens and this affects the thickness of the buffy coat. The type of leukocytes responsible for a thick buffy coat can be determined by making a differential count on the stained blood smear. Bacterial infection usually causes an increase in heterophils; the avian cell corresponding to the mammalian neutrophil.

In birds affected with the leukosis complex, there may be an increase in leukocytes. If a leukemic condition exists, the invading type cells will usually be immature, but they can be distinguished as belonging to either the granulocytic or lymphocytic series. An average hematocrit of normal chicken blood is about 29.0 per cent but, in a severe anemia due to a low red blood cell value, it might be 10.0 per cent. In a granuloblastic condition, the buffy coat might be 60.0 per cent. A smear made from such a sample would make the diagnosis obvious, while the lesions seen on necropsy

may be vague. In hemorrhagic disease, the usually definite anemia and leukopenia aid in making a diagnosis. Blood spirochetes will also accumulate with the leukocytes as a whitish layer. When indicated, a portion of the buffy coat can be removed with a filling pipette to prepare a smear.

The icterus index, which can be determined by comparing the color of the plasma with prepared standards, is variable and not very significant since it probably is affected by the ration.

#### BLOOD SMEARS

A blood smear is prepared when the blood is collected or from the oxalate sample at the same time the hematocrit tube is filled. After completing the necropsy, the smear is stained and examined for blood parasites or other abnormalities. A modified Wright's stain<sup>1</sup> has given us the most consistent results for avian blood. A differential count is not made unless indicated. Pullet disease, or bluecomb, usually produces a relative and absolute monocytosis which shows up as an increased white cell value with a high percentage of monocytes on a differential count. In affected birds, these cells may range from 12.0 to 52.0 per cent as compared with the normal of about 8.9 per cent.<sup>2</sup> The term "avian monocytosis" has been proposed for this disease. The normal differential leukocyte count of hens as given by Olson<sup>2</sup> in percentages is: lymphocytes, 64.6; heterophils, 22.8; eosinophils, 1.9; basophils, 1.7; and monocytes, 8.9.

#### HEMOGLOBIN

Hemoglobin values can be determined by acid-hematin methods, using the Dare or Haden-Hausser hemoglobinometer as used for mammals. This gives high values because of the turbidity caused by the nuclei of the erythrocytes. It can, however, be corrected by using a correction factor: (reading x 0.91) - 1.49 = corrected reading.<sup>3</sup>

#### SEROLOGY

Cases resembling chronic pullorum disease or fowl typhoid can be easily checked with polyvalent antigen. A drop of the antigen is placed on a slide or glass plate.

<sup>1</sup>Modified Wright's stain:<sup>1</sup> Wright's stain (powder), 300 mg.; Giemsa stain (powder), 30 mg.; acetone-free methyl alcohol, 100 ml.; allow to stand 24 hours, then use as Wright's stain.

TABLE 1—Observations Made on Blood Samples from Broilers and Hens

Flock	Breed	No. samples	Range PCV	Mean PCV	SD of PCV	Range BC	Mean BC	SD of BC
1	White Plymouth Rocks	128	22.0 — 35.0	29.8	± 3.29	0.5 — 4.0	1.6	± 0.58
2	White Plymouth Rocks	59	22.0 — 33.0	28.5	± 2.39	1.0 — 3.0	1.7	± 0.16
3	White Plymouth Rocks	75	23.0 — 32.0	27.5	± 2.21	0.6 — 3.0	1.53	± 0.14
4	Rhode Island Reds	79	25.0 — 33.0	29.1	± 2.17	1.0 — 2.2	1.56	± 0.11
5	Silver Cornish cross	78	21.0 — 31.0	27.5	± 1.75	0.8 — 2.2	1.4	± 0.11
	Combined	419	21.0 — 35.0	28.6	± 2.61	0.5 — 4.0	1.56	± 0.15
Hens	Several	50	27.0 — 40.0	33.82	± 2.8	0.5 — 4.0	2.1	± 0.7

PCV = packed cell volume or hematocrit in percentages; BC = buffy coat in percentages; SD = standard deviation of the mean.

A drop of fresh blood is then placed on the antigen and mixed with the loop, spreading the mixture over an area 1 inch in diameter. The plate is then tilted from side to side several times. The test can be read in 15 to 20 seconds. In a positive reaction, there is a definite agglutination or clumping of the stained organisms contained in the antigen. Pullorum and fowl typhoid cross agglutinate, so that the blood of birds affected with either disease will cause a positive reaction. History, symptoms, lesions, and cultures will usually reveal which disease is involved.

In cases suspected of being a virus disease, whole blood samples are collected in the same manner to provide serum for any indicated diagnostic tests.

#### METHODS

This study was primarily concerned with hematocrit tube determinations to obtain information on normal blood values in chickens to which to compare readings obtained from birds presented for diagnostic purposes. Blood was collected at a local poultry dressing plant from hens and broilers about 10 weeks of age. These birds had been raised under average conditions in southern Georgia and were of several breeds from several different flocks. Flock histories pertaining to disease conditions, antibiotics fed, and ration received were not available. A representative group of the carcasses and viscera from each flock from which blood was collected was examined and no obvious disease conditions were revealed.

Approximately 5 ml. of blood was collected in oxalate tubes, immediately after the vessels of the neck were cut, and taken to the laboratory and placed in a refrigerator. All blood determinations were completed within 36 hours. The blood was brought to room temperature, thoroughly mixed by inverting the tubes, then placed in Wintrobe hematocrit tubes, and centrifuged at 3,000 r.p.m. for 30 minutes in a centrifuge with a radius of 23.5 cm. (relative centrifugal force = 2,364.5 times gravity). The tubes were read as soon as the centrifugation was complete.

#### DISCUSSION

These data (table 1) indicated that, for the broilers, 68.0 per cent of the observations fall within the range of 26.0 to 31.0 per cent for the packed cell volume and 1.4 to 1.7 per cent for the buffy coat. For the hens, 68.0 per cent of the observations fall within the range of 31.0 to 37.0 per cent for the packed cell volume and 1.4 to 2.8 per cent for the buffy coat.

The values obtained on the hens and on diagnostic cases indicate that the mean packed cell volume of broilers may be slightly lower than in adult birds. The buffy coat may also be slightly higher in adult birds; however, all adults in this study had been under the stress of laying which may have influenced these values.

The author hopes to make a comparative study of the blood values in: chickens of various ages, birds fed antibiotics and other medications, laying and nonlaying hens, and chickens during various seasons of the year.

Wintrobe tube determinations have been made on all poultry diagnostic cases received for a period of nine months. The majority of values fell within the determined normal ranges, which at times was helpful in reaching a diagnosis. In many cases in which the lesions were vague, the blood values were the primary factor in obtaining the correct diagnosis and preventing a false or no diagnosis. It is felt that the results warrant the routine use of these tests on all cases received for diagnosis.

#### SUMMARY

The routine adopted for use in this laboratory is as follows:

- 1) A blood sample is collected before birds are killed.
- 2) Birds suspected of having pullorum disease or fowl typhoid are tested with polyvalent antigen.
- 3) A hematocrit tube is filled and placed

in a centrifuge while the necropsy is being performed. The thickness of the buffy coat and red blood cell volume are recorded.

4) A blood smear is prepared, stained, and examined.

5) A differential count is made on birds suspected of having pullet disease and those having a thick buffy coat.

#### References

- Reich, Carl: Modified Wright's Stain. *Am. J. Clin. Path.*, 24, (1954): 881.  
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 Coffin, D. L.: *Manual of Veterinary Clinical Pathology*. 3rd. ed. Comstock Publishing Associates, Ithaca, N. Y., 1953.

### Dichloralphenazone

Dichloralphenazone, known 60 years ago as "hypnal," is composed of 2 molecules of chloral hydrate and 1 of phenazone. Its activity is comparable to that of chloral hydrate in hypnotic properties, antipyretic action, and toxicity but, due to its content of phenazone, it possesses more analgetic properties. It is free of the odor and unpleasant taste of chloral hydrate.—*J. Am. Pharm. A., March, 1956.*

**Aureomycin Inhibits Cellulose Digestion.**—Aureomycin® inhibited cellulose digestion in an artificial rumen. When the artificial rumen was inoculated with microorganisms from cows fed the antibiotic, 73 per cent of the cellulose was digested; when microorganisms from control cows were used, 85 per cent of the cellulose was digested. With ingesta from 4-month-old calves, which had been receiving the antibiotic, the rate was 58 per cent, compared with 78 per cent when the ingesta was from controls. Most of the inhibitory effect was lost after a period of adjustment by the microorganisms.—*J. Dai. Sci., March, 1956.*

**Pseudotuberculosis in Laboratory Animals.**—*Corynebacterium pseudotuberculosis murium* caused the death of about 2 per cent of mice purchased from a commercial breeder. Latent infection was found in mice from another source. Since activation of this infection by a stress agent may invalidate experimental results, systematic postmortem examination should be stressed. Eradication of this disease is difficult.—*Science, March 16, 1956.*

### Amnioallantoic Dropsy in Cows

Twelve of 15 cases of hydrops of the fetal membranes in cows of two beef and two dairy breeds were studied. All, except an experimental dairy cow, had been on drought pastures the first months of gestation. This cow was affected on two successive pregnancies; the first occurred near the end of gestation and was relieved without surgery.

The condition was usually first noticed at about seven and one-half months of gestation. Various surgical techniques were used, but none of the calves and only 3 cows survived.

At necropsy of 1 cow, the kidneys showed fatty infiltration. In the calf, the thyroid glands were hyperemic; however, the lesions possibly of greatest significance were in the adrenal glands where the glomerular zones were large, with vesiculated cells, while the fascicular and reticular zones and the medulla were small.—*Southwest. Vet., Winter, 1956.*

**Urinary Excretion of Fluoride.**—When the fluoride in drinking water was reduced from 8 to 1 p.p.m., at Bartlett, Texas, the urinary excretion of fluoride, in specimens from both children and adults, decreased in 27 months from 6 to 8 p.p.m. to approximately 2 p.p.m. The latter is higher than would be expected had the population not been long exposed to high levels of fluoride. It indicates that previously stored fluoride was still being mobilized.—*Pub. Health. Rep., March, 1956.*

### Thyroid Activity and Tuberculosis

When the thyroid activity of rabbits was stimulated, their resistance to tuberculosis increased; when their thyroid activity was depressed, the disease spread rapidly. This is believed due to the effect of the thyroid secretion on phagocytic activity. The ill-effect of cortisone on persons with tuberculosis is probably due to suppressed thyroid function.—*Sci. News Letter, March 17, 1956.*

**Tar Poisoning in Pigs.**—Experiments proved that tar used in laying new floors caused typical toxic liver dystrophy in pigs in 13 piggeries in Germany.—*Vet. Bull., March, 1956.*



## What Is Your Diagnosis?

Because of the interest in veterinary radiology, the JOURNAL publishes this month, and will continue to do so for the next several issues, a case history and accompanying radiographs depicting a diagnostic problem.

**Make your diagnosis from the picture below—then turn the page ►**



Fig. 1—Anterior view of the foot of the cow.

*History.*—A Holstein-Friesian cow, 5 years old, became lame in the left hindfoot. A sprain of the volar ligaments was suspected. Four days later, a swelling developed around the lateral digit above the claw, suggesting a sub-acute foot infection. The condition be-



Fig. 2—Lateral view of the foot of the cow.

came worse and showed no response to therapy. Radiographs (fig. 1 and 2) were taken.

(Diagnosis and findings are reported on next page)



## Here Is the Diagnosis

(Continued from preceding page)

**Diagnosis.**—Fracture of the proximal articular surface of the second phalanx of the lateral digit.

**Comment.**—Figure 1 shows a displacement, laterally, of the proximal extremity of the second phalanx of the lateral digit. Figure 2 shows a fragment of bone, anteriorly, in the swollen soft tissues.



Fig. 3—Photograph of the sagittal ridge of the second phalanx and the rough depression left after its expulsion.

The piece of bone was surgically removed, along with much necrotic tissue. It was assumed (verified, *see* fig. 3) to be the sagittal ridge of the proximal articular surface of the second phalanx. Subsequently, a high amputation of the digit was performed as described by Raker.<sup>1</sup> Healing, by second intention, required five weeks. A week after the operation, the cow had regained her former level (55 lb.) of milk production and, in a month, her physical condition was good.

This case report was submitted by Dr. W. B. Durrell, Department of Animal Pathology, University of Vermont, Burlington. The radiographs were taken by Dr. R. O. Fournier, Burlington (Vt.) Animal Hospital, and the photograph was taken by J. W. Spaven, B.S., agricultural editor, University of Vermont. Printed by permission of the Vermont Agricultural Experiment Station; journal series paper No. 58.

Our readers are invited to submit case histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

<sup>1</sup>Raker, C. W.: Television Broadcast—Demonstration of Amputation of Cow's Claw. *Proc. Book, AVMA* (1952): 44-55.

## An Abnormality of the Proventriculus of the Chick

P. M. NEWBERNE, D.V.M.; M. E. MUHRER, Ph.D.;  
ROBERT CRAGHEAD, B.S.; B. L. O'DELL, Ph.D.

*Columbia, Missouri*

The purpose of this paper is to describe an abnormal condition in the digestive tract of the chick. During a study of the adequacy of various purified proteins for the chick, a number of birds were observed to have a noticeable distention of the proventriculus so that it was continuous with the gizzard (fig. 1B, C, D). In the normal bird, the area between the proventriculus and the gizzard is particularly dense in elastic tissue<sup>1</sup> and it may act as a sphincter. In the affected birds, this area was dilated and the musculature was thinner than normal (fig. 4B). The lining tissues were absent in much of the distended area.

From the Department of Veterinary Bacteriology and Parasitology, School of Veterinary Medicine, and Department of Agricultural Chemistry, University of Missouri, Columbia.

Contribution from the Missouri Agricultural Experiment Station, journal series No. 1579, approved by the director.

### GROSS APPEARANCE

When the proventriculus was exposed, a noticeable dilatation was observed in the area of the proventriculus and the gizzard (fig. 1B, C, D). When an incision was made in the distended area a thin, turbid fluid escaped. There was no observable obstruction or stenosis in the gizzard or in the remainder of the digestive tract. Except for the dilatation in the affected area, the digestive tract appeared grossly normal.

### MICROSCOPIC APPEARANCE

Microscopically, there was hypertrophy of the columnar epithelium of the surface tubular glands, collecting cavities, and the excretory ducts of the deeper glands (fig. 3). The architecture of the tubules appeared unchanged; however, there was evidence of hyperplasia in the gland lobules. The musculature of the area between the proventriculus and the gizzard was thin, with the circular layer being most affected (fig. 4B). The longitudinal muscle layer was absent in many places. The area of dilatation was largely denuded of lining tissues.

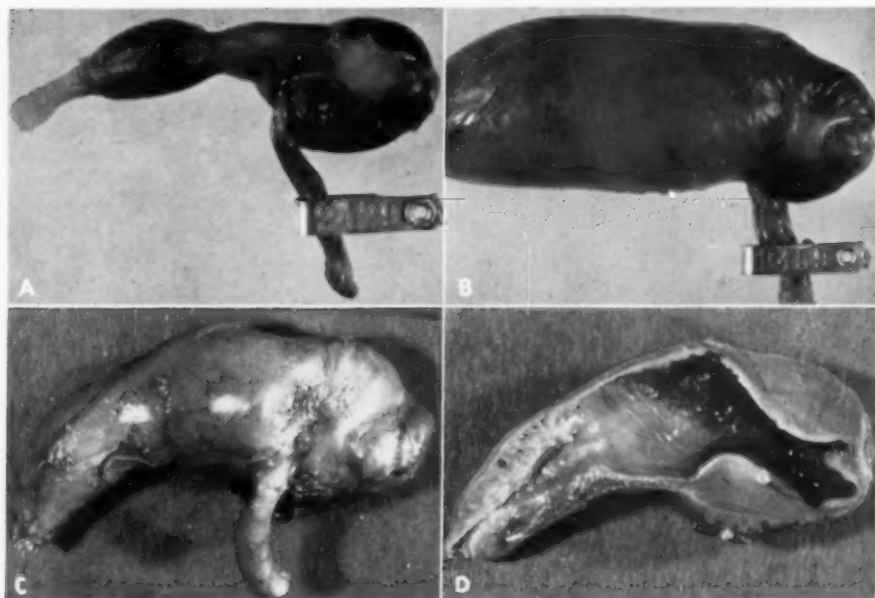


Fig. 1 (A)—Normal proventriculus and gizzard of a chick.

(B)—Distended proventriculus continuous with gizzard.

(C)—Distention more pronounced near the gizzard.

(D)—The same gizzard shown in figure 1C incised to show internal dilatation.

## HISTORY

The Single-Comb White Leghorn chicks observed in this study were obtained largely from the University poultry department, but two groups came from commercial hatcheries. The day-old chicks were housed in electrically heated batteries and fed their respective diets for four weeks. At that time, they were destroyed and the internal organs were examined for gross changes. The composition of a typical puri-

fied diet consumed by the affected birds is shown in table 1.

About 15 per cent of the chicks observed had a noticeable distention of the proventriculus. The abnormality occurred when the birds consumed a wide variety of protein sources, including casein, lactalbumin, blood fibrin, purified soy protein, and ovalbumin.

## DISCUSSION

The fact that in many cases the enlarged

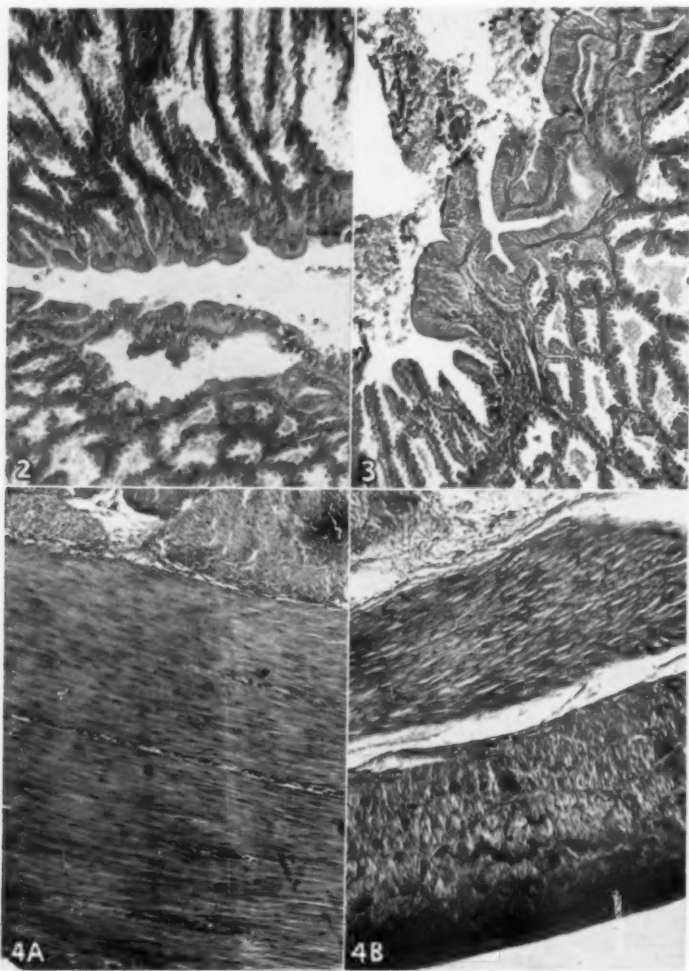


Fig. 2—Epithelium of normal chick proventriculus. Hematoxylin and eosin stain; x 100.

Fig. 3—Epithelium of proventriculus of chick on synthetic diet. Hematoxylin and eosin stain; x 100.

Fig. 4(A)—Musculature from normal chick proventriculus. Hematoxylin and eosin stain; x 100.

Fig. 4(B)—Musculature from chick with distended proventriculus. Hematoxylin and eosin stain; x 100.

TABLE 1—Composition of Chicks' Diet

Constituents	Per cent	Constituents	Per cent
Soybean protein*	36.0	Mineral mixture <sup>2</sup>	5.0
Glucose hydrate	45.2	DL-methionine	0.8
Wood pulp	3.0	Vitamins	+**
Soybean oil	10.0		

\*Water-washed alpha protein obtained from Glidden, Chicago, Ill.

\*\*The vitamins added per 100 Gm. of purified diet included: thiamine HCl, 1.0 mg.; riboflavin, 1.0 mg.; pyridoxine HCl, 1.0 mg.; calcium pantothenate, 3.0 mg.; niacin, 5.0 mg.; inositol, 50.0 mg.; biotin, 0.02 mg.; folic acid, 0.2 mg.; choline Cl, 200.0 mg.; vitamin E, 2.5 mg.; and vitamin K, 2.5 mg.

proventriculus is filled with a liquid, and that there is a hypertrophy of the epithelial tissue, suggests that the organ is stimulated to a hyperactive state.

Histamine is known to stimulate the secretion of gastric juice in birds as well as mammals.<sup>3</sup> In preliminary trials, it was found that histamine injections tend to increase the incidence of the distended proventriculus. Approximate pH determinations on the fluid from the enlarged proventriculus of affected birds indicated that it was more acid than that of controls.

Farner<sup>4</sup> reported that diets high in protein or milk products increased the pH of mixed gastric juice and it is possible that the diets used in this study had a similar effect. However, whether or not the enlarged proventriculus is of dietary origin is purely speculation at this time. The fact that it was observed in birds from three different sources tends to rule out the genetic factor. There was no evidence of disease in the birds observed.

#### SUMMARY

An abnormal condition in the digestive tract of chicks is described in which the proventriculus and adjacent area are grossly distended.

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- <sup>4</sup>Farner, D. S.: *The Effect of Certain Dietary Factors on Gastric Hydrogen Ion Concentration and Acidity in the Domestic Fowl*. Poul. Sci., 22, (1943): 295.

## Streptococcus Agalactiae Isolated from Cervical Abscesses in Swine

C. J. HOLLISTER, D.V.M.

Kennett Square, Pennsylvania

Previous reports<sup>1,2</sup> have been made concerning the isolation of streptococci from cervical abscesses in swine. This report concerns the isolation of *Streptococcus agalactiae* from cervical abscesses and the circumstantial evidence pointing to the possible source of infection.

Two, 14-week-old pigs with cervical abscesses were presented at the New Bolton Center clinic on March 14, 1955. The owner reported that 15 shoats in a group of 40 had similar abscesses. The swine had at no time shown any evidence of systemic illness. They remained active, had no fever, and their appetites remained normal. Their rations consisted of ground alfalfa, corn, and oats mixed with skim milk, whey and, occasionally, with whole milk which had been rejected on deck inspection in a local dairy. The containers used to transport these by-products from the dairy to the farm were used repeatedly without being cleaned.

Bacteriological examinations of the drained contents of the abscesses showed the infective organism to be *Str. agalactiae*. The classification of the organism was based on the Camp test.<sup>3</sup>

#### References

- <sup>1</sup>Snoeyenbos, G. H., Bachman, B. A., and Wilson, E. J.: Abscesses Associated with Group E Streptococci. J.A.V.M.A., 120, (1952): 134-137.
- <sup>2</sup>Collier, J. R.: A Survey of *Beta* Hemolytic Streptococci from Swine. Proc. Book, AVMA (1951): 169-172.
- <sup>3</sup>Munch-Petersen, E., and Christie, R.: J. Path. and Bact., 59, (1947): 367.

Dr. Hollister is director of clinics, New Bolton Center, School of Veterinary Medicine, University of Pennsylvania, Kennett Square.

## Determining Hog Carcass Fat Content

The specific gravity of a carcass, which is weight per volume and easily determined, was found, at the University of Wisconsin, to be practically as accurate as the expensive ether-extract method for determining the fat content of hog carcasses. Measuring the specific gravity of the ham alone is sufficient since it closely represents that of the whole carcass.—*Univ. of Wisconsin, Feb. 27, 1956.*

# Active and Passive Protection of Mink Against Type C Botulism with Type C Toxoid and Polyvalent Antitoxin

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BOTULISM has been a cause of devastating epizootics of food poisoning on mink farms throughout this country and abroad.<sup>1,2</sup> The causative organism has frequently been *Clostridium botulinum*, type C. Quortrup and Gorham<sup>3</sup> found that mink are extremely susceptible to the type C toxin but only moderately so to the toxins of types A and B. In recent years, Dinter and Kull<sup>4</sup> and Larsen *et al.*<sup>5</sup> have reported the development of type C toxoids which give full protection to mink.

Botulism is also a common problem in wildlife management and any objective or quantitative information that may be obtained should be useful in coping with the disease.

The purpose of the work reported here was to ascertain the effectiveness of several lots of toxoid, including an alumina gel adsorbate and an alum precipitate.

A limited, accompanying study was made of the effect of treatment with antitoxin at various intervals after the ingestion of toxin. Principle, as well as practice, dictates that the administration of antitoxin is useless once the signs of intoxication appear, yet it is a common practice in an afflicted mink herd to administer the polyvalent antitoxin even to animals with well-advanced cases. It was deemed desirable to learn if the dosage of antitoxin usually employed might be of demonstrable protective or curative value.

Uncontrolled observations have attributed value to gavage of sick animals with

water or magnesium sulfate solution and, hence, limited trials were also made with these procedures.

## MATERIALS AND METHODS

**Culture.**—The culture employed for the production of toxin for toxin-potency and immunogenicity tests was *Cl. botulinum*, type C, South Africa strain.<sup>6</sup> The organism was grown in a tryptone-glucose-corn steep liquor medium and the broth developed a titer of approximately 10<sup>8</sup> mouse l.d.<sub>50</sub> per milliliter. A titration of the toxicity of the preparation indicated an l.d.<sub>50</sub> of 0.01 ml. for mink.

**Toxoids.**—Two forms of C-type toxoids were used: an alumina gel adsorbate<sup>7</sup> and an alum-precipitated product.

**Antitoxin.**—The botulinus antitoxin<sup>8</sup> used was of bovine and equine origin, polyvalent for toxin types A, B, and C.

**Experimental Animals.**—Young adult mink soon to be pelted were made available for the trials by the Associated Fur Farms, Inc., New Holstein, Wis.

**Procedure.**—A total of 294 young adult mink were each injected subcutaneously with 1 ml. of the alumina gel adsorbate toxoid on Sept. 7, 1955. On Oct. 6, 1955, an additional 300 young adult mink on this ranch were vaccinated with this product, and 100 were injected with lots 4 and 5 of the alum-precipitated toxoid. Also on this date, 100 mink at a neighboring ranch were vaccinated with 1 ml. each of the alumina gel toxoid.

Vaccinated and control mink were divided and placed in two groups. One group was challenged on Nov. 30, 1955, with 1 ml. each of the undiluted toxin; the other group with 1 ml. each of the toxin diluted 1:10, by mixing the toxin with their feed (table 1).

For the antitoxin-protection study, 8 control mink from each group were selected at four-hour intervals after they were first given access to toxin-treated feed and injected intraperitoneally with 8 ml. of the polyvalent antitoxin.

Twenty control mink were employed to determine the effect of magnesium sulfate solution and water. They had been exposed to toxin diluted 1:10, 20 hours earlier, and were showing early signs of intoxication. Half were treated with a gavage of 20 ml. each of a 10 per cent magnesium

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This paper includes data constituting part of a thesis to be submitted to the Graduate School, University of Wisconsin, in partial fulfillment of the requirements for the Master of Science degree, 1956. The work reported is part of investigations under project 928 of the Wisconsin Agricultural Experiment Station supported in part by funds from the Wisconsin Department of Conservation and the Mink Farmers' Research Foundation, Inc. Published with the approval of the director of the Wisconsin Agricultural Experiment Station. This paper represents NS 201 from the Departments of Veterinary Science and Bacteriology, University of Wisconsin, Madison.

\*Obtained from Dr. S. J. Schilling, Jensen-Salsbery Laboratories, Kansas City, Mo.

†Obtained from Dr. A. Hjarre, director, State Veterinary Medical Institute, Stockholm, Sweden.

‡Fort Dodge Laboratories, Fort Dodge, Iowa.

sulfate solution by means of a syringe and metal catheter, and the other half with 20 ml. of water.

### RESULTS

The alumina gel adsorbate toxoid produced good immunity to the toxin, while the alum-precipitated toxoid provided only a low degree of protection (table 1).

ratio. Delaying treatment to 16 hours resulted in a high mortality. These results are indicated graphically (graph 1).

After 24 hours, only 3 untreated mink of the group provided for testing with antitoxin remained alive. Only 1 of those 3 survived after treatment. Therefore, the figure shown on graph 1 for the 24-hour

TABLE 1—Results of Challenge of Immunity Engendered Among Mink by Clostridium Botulinum, Type C, Toxoid

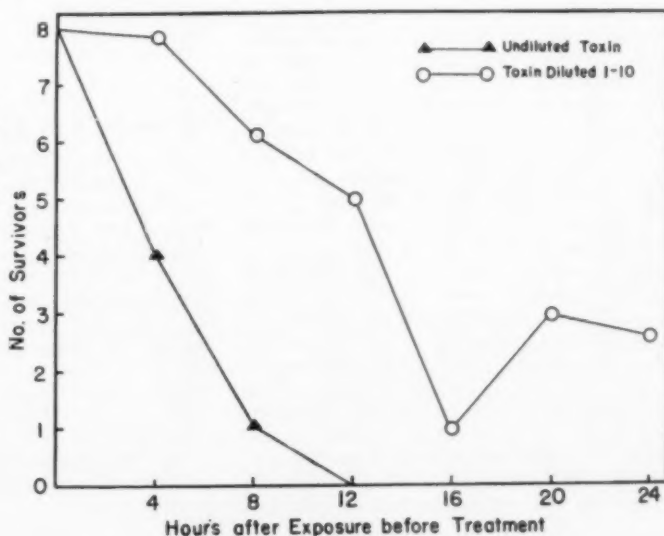
Group	Toxoid	Toxin dilution	No. of days vaccinated before challenge	No. of mink	No. of survivors	Percentage survival
1	AGA	Undiluted	84	141	140	99.3
2	AGA	1:10	84	150	150	100.0
3	AGA	Undiluted	55	143	141	98.6
4	AGA	1:10	55	127	126	99.2
5	AP-4	Undiluted	55	15	4	26.7
6	AP-4	1:10	55	14	10	71.4
7	AP-5	Undiluted	55	28	0	0
8	AP-5	1:10	55	25	4	16.0
9	None (control)	Undiluted	—	16	0	0
10	None (control)	1:10	—	30	0	0

AGA = alumina gel adsorbate; AP-4 = alum precipitate, lot 4; AP-5 = alum precipitate, lot 5.

The antitoxin-protection study revealed an inverse relationship between the time that elapsed after the ingestion of the toxin and before administration of the antitoxin, and the percentage of survivors. With animals that received undiluted toxin, death was a certainty if the administration of antitoxin were delayed as long as 12 hours. Among animals which had received diluted toxin, treatment with antitoxin at 12 hours provided a substantially better survival

period of treatment represents an extrapolation of the results obtained. Of the mink treated with magnesium sulfate solution, or with water, 20 hours after exposure to toxin, 3 of 10 and 2 of 10, respectively, survived. These results may not be considered significant because many of the mink had failed to survive for 20 hours and those that did might have possessed unusual resistance for various reasons; some apparently survived because they had not eaten all of the toxin-carrying feed.

Graph 1—Relationship of delay of antitoxin treatment to survival of mink poisoned with Clostridium botulinum, type C, toxin.





## DISCUSSION

The results of the study confirm the findings of others that active immunization of mink against type C botulism is possible and practical when a fully potent toxoid is used. Dinter and Kull<sup>4</sup> reported good results with an alumina gel adsorbate, and Larsen *et al.*<sup>5</sup> reported successful immunization with an alum-precipitated product. Good results were achieved in these trials only with the alumina gel adsorbate, but it is possible that differences in immunogenicity between the two types may be associated with differences in stability of the prepared toxoid if a high-titer toxin is used initially. We were informed subsequent to the completion of the trials that lots 4 and 5 of the alum-precipitated toxoid were substandard as a result of a previously unrecognized low titer of the toxin. It was indicated that other lots provided us from the same source would not afford effective protection because of loss of potency during 15 months of storage.

A high level of immunity was indicated among the mink 55 days after vaccination. This agrees with the observation of Dinter and Kull<sup>2</sup> who found full protection in mink after five weeks. These authors also reported that a single injection of toxoid produced an immunity enduring for at least seven months. Further studies are indicated to learn the duration of immunity in breeding stock under different circumstances and at different ages at vaccination and revaccination.

The results of the antitoxin-protection study indicate that active immunization with a reliable toxoid is the most desirable and practically effective method of preventing losses from botulism. With the appearance of signs of intoxication, the animals may not be expected to respond satisfactorily to administration of antitoxin.

A number of recent extensive outbreaks of botulism on mink ranches have resulted from purchase and use of previously "spoiled" frozen whale or other meat. There was no culpability on the part of the mink rancher in storing or handling of the meat. To protect against such catastrophes, it appears that a specific toxoid which stimulates an active serviceable immunity may prove to be a valuable asset. Unless the type-specific toxoid (e.g., type C for C, type B for B intoxication) is employed, protection will, of course, not be afforded.

## SUMMARY

An effective degree of protection against ingestive exposure to *Clostridium botulinum*, type C, toxin was afforded mink vaccinated with a type C alumina gel adsorbate toxoid 55 and 84 days previously. Two lots of an alum-precipitated toxoid, reportedly prepared from a low-titer toxin, provided little or no protection.

Studies showed that the protective effect of the botulinus antitoxin declined rapidly as the time after ingestion of the toxin increased. After a large dose of the toxin (10 to 100 l.d.<sub>50</sub>), treatment with antitoxin was apparently of little, if any, value when given 12 hours or more after exposure.

Gavage with magnesium sulfate solution or water was not significantly effective in preventing losses from botulism among animals with advanced signs of the disease.

## References

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## Tuberculosis in Zoo Animals

Two orangutans and 1 chimpanzee which became ill and died in recent months in a Texas zoo were found, on necropsy, to have miliary tuberculosis. A third orangutan, which was tested when it became ill in December, is being treated under isolation. The orangutans had been purchased a few months earlier. A second chimpanzee, which reacted to the intrapalpebral tuberculin test, was destroyed and necropsy revealed miliary tuberculosis. The attendants were negative on chest radiographs, and all other animals in the primate house were negative to the tuberculin test. The source of the infection is uncertain.—*U.S.P.H.S., March 1, 1956.*

# The Prevention of Virus Enteritis of Mink with Commercial Feline Panleukopenia Vaccine

GORDON WILLS, D.V.M., and JOAN BELCHER, D.V.M., M.S.

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AN ACUTE, highly contagious enteritis of ranch mink, causing mortality in kits which sometimes reached 90 per cent, was studied by Schofield<sup>1</sup> in the Fort William district of Ontario during the late 1940's. He believed the disease to be due to a virus. As characteristic signs of the disease he described peculiar sluglike casts in the intestinal discharge and certain degenerative changes in the intestinal mucosa. Histopathologically, these changes apparently presented a specific diagnostic picture. The disease became known as Fort William disease.

Wills,<sup>2</sup> investigating epizootics of enteritis in southern Ontario mink ranches, which presented similar clinical signs and histopathological changes, demonstrated by means of a serological cross-protection test that the disease there and at Fort William was the same. He also recorded experiments which led to the conclusion that the condition was due to an agent which was, or bore a strong antigenic relationship to, the virus of feline enteritis (panleukopenia).

Wills<sup>3</sup> disputed the use of the appellation, "Fort William disease," since the name implied that Ontario was the point of origin of the infection. He suggested that virus enteritis "had previously been diagnosed incorrectly and over many years as a variety of other ailments." However, Gorham and Hartsough<sup>4</sup> stated that, "an acute enteritis has appeared on mink farms of the Fort William area of Ontario and has since spread to southern Ontario, Wisconsin, Illinois, and possibly the north-eastern United States." If the virus was related or similar to panleukopenia of cats, they postulated a mutant of it in order to account for the appearance of the disease in mink. They regarded the development of effective control measures as an interesting challenge to those concerned with fur animal disease research.

It is the purpose of this contribution to

show that commercial vaccine of feline tissue origin is already available for the protection of mink and to present additional evidence that the virus of mink enteritis is also, antigenically at least, the virus of feline panleukopenia.

## MATERIALS AND METHODS

*Experimental Animals.*—Mink kits for experimental use were obtained from several ranches (table 1) with no history of virus enteritis. Different ranch sources are indicated by letters in column 2 of the table. Vaccinated mink were always

TABLE 1.—Comparison of Clinical Response of Mink Vaccinated with Commercial Feline Panleukopenia Vaccine and Unvaccinated Controls when Challenged with Mink Enteritis Virus

Experiment No. & date	Mink source (ranch)	Vaccinated mink (No.)	Response to challenge	Control mink (No.)	Response to challenge
1 Sept. 1953	A	1	None	1	None
		2	None	2	Died
		3	None	3	Died
		4	None	4	Died
2 Nov. 1953	A	5	None	5	Mild
		6	None	6	None
		7	None	7	Mild
		8	None	8	Moderate
3 Aug. 1954	A	9	None	9	None*
		10	None	10	None
		11	None	11	Moderate
		12	None	12	Severe
		13	None	13	None*
4 Sept. 1954	B	15	None	15	Severe
		16	None	16	Severe
		17	None	17	Severe
5 Aug. 1955	C	18	None	18	Died
		19	None	19	None
		20	None	20	None
		21	None	21	None
		22	None	22	Mild
6 Oct. 1955	D	23	None	23	None
		24	None	24	None
		25	None	25	Died
		26	None	26	Mild
	A	27	None	27	Mild
		28	None	28	Moderate
		29	None	29	Severe
		30	None	30	Died
	E	31	None	31	None
		32	Mild	32	Moderate
33		None	33	Moderate	
34		None	34	Died	
F	35	None	35	Died	
	36	None	36	Severe	
	37	None	37	Died	
	38	None	38	.....	

\*A probable case but not showing complete loss of appetite

From the Department of Pathology and Bacteriology (Virology Laboratory), Ontario Veterinary College, Guelph.

matched against unvaccinated mink from the same ranch and were alternated in cages side by side in the same room or shed and under the same caretaker.

Experiments 1 to 5, inclusive, were conducted completely in experimental quarters under stringent sanitary precautions. The mink in experiment 6 were vaccinated at the ranches of source and then, with their controls, were all brought together for challenge on an infected ranch.

**Vaccine.**—The antigen used was labeled "feline distemper vaccine," manufactured in the United States and procured on the open market in Ontario. The vaccine consists of a formalized suspension of liver and spleen taken from cats at the height of infection with panleukopenia (feline infectious enteritis) virus. Descriptive information accompanying the vaccine makes no mention of the inclusion of any other viral or bacterial antigen. The vaccine was from two sources, one company's product being used in experiment 5 and that of the other company in experiments 1, 2, 3, 4, and 6.

Mink were treated by the same schedule recommended by the manufacturers for use in cats, *i.e.*, two doses of 2 cc. each, subcutaneously, with one week intervening between doses.

**Challenge.**—Mink were challenged from two to three weeks after the first dose of vaccine with 6 cc. of a 20 to 30 per cent suspension of liver and spleen harvested from mink which died of virus enteritis during natural ranch outbreaks in southern Ontario. The virus-bearing tissues were stored for variable periods up to one month at  $-20^{\circ}\text{C}$ . Challenge material was administered by stomach tube.

**Criterion of Infection.**—The variability in appearance of the intestinal discharge of mink with virus enteritis has been described.<sup>2</sup> The characteristic, perhaps diagnostic, sluglike cast is the exception rather than the rule in the disease on some ranches as well as in some experimentally infected groups. In the experiments recorded here, any definitely abnormal intestinal discharge occurring between the fourth and eighth day after challenge and accompanied by sudden, complete anorexia for at least 24 hours (1 meal) has been listed as a case of virus enteritis. Diarrhea in most cases occurred on the fifth or sixth day postchallenge. The response of animals to challenge has been recorded (table 1) according to clinical impression as: none, mild, moderate, and severe. "Death" rather than "severe" is noted where this occurred. Cases in animals ranged in severity from those showing a transient loss of appetite, accompanied by scant but definite mucoid diarrhea followed by return to normal in 24 hours, to those with extended anorexia, casts, copious enteric discharges which were sometimes bloody, and death. All mink ate normally and produced normal feces before challenge and until at least the fourth day postchallenge.

## RESULTS AND COMMENTS

An examination of table 1 reveals that only 1 of 37 vaccinated mink showed signs consistent with a diagnosis of virus enteritis after heavy challenge with mink enteritis virus. On the other hand, 25 of 37 ranch mates of the vaccinated mink showed signs of enteritis which met the established criterion of infection. Of these 25, 9 died, 6 were classified as severe cases, 5 as moderately severe, and 5 as mild. Listed in the table as negative are 3 probable cases which had an alteration in the feces but not complete anorexia for 24 hours.

## SUMMARY AND CONCLUSIONS

All but 1 of 37 mink vaccinated with commercial feline panleukopenia vaccine were solidly protected against challenge with mink enteritis virus. The same challenge caused enteritis in 25 of 37 unvaccinated controls, 9 of which died.

It is concluded that inactivated panleukopenia virus vaccine of feline tissue origin is an efficient agent for the protection of mink against virus enteritis. This supports the proposition that virus enteritis of mink is caused by feline panleukopenia virus.

## References

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- <sup>3</sup>Wills, G.: Infectious Enteritis of Mink. *Fur Trade J. Canada*, 30, (1953): 10-29.
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## Chemotherapy of Fowl Cholera

When chickens which were experimentally infected with *Pasteurella septica* were treated six to 24 hours after infection, oxytetracycline (terramycin®) intramuscularly, 25 mg. per kilogram of body weight, was more effective than penicillin, dihydrostreptomycin, chloramphenicol, chlortetracycline (aureomycin®), or quinoxaline. Sulfamerazine was also less effective unless given in the mash (0.2%) or in the drinking water (0.1%) starting before infection. Furazolidone was of no value.—*Vet. Bull., Feb., 1956.*

## Antibiotics and Intestinal Flora

When chicks in a clean environment were fed chloromycetin,<sup>®</sup> growth response was delayed and accompanied by an increase in intestinal coliform organisms. As the antibiotic level was increased, the lactobacilli count receded. When chicks were raised in a contaminated environment, growth increase occurred early and was accompanied by an increase in the coliform organisms, also by a reduction in enterococci. The growth response seemed to be related to the increase in the coliform organisms.—*Poult. Sci.*, Jan., 1956.

**Calcium Levulinate for Parturient Paresis.**—For cows with parturient paresis, calcium levulinate solution seemed as effective, in 11 cases in Australia, as calcium gluconate. Each cow received 500 ml. of a 13 per cent solution—9 intravenously while 2 were given a portion of the dose subcutaneously. No untoward effects followed the subcutaneous injections.—*Vet. Bull.*, March, 1956.

## Vitamin Reserve in Young Chicks

Vitamin deficiency is most likely to become apparent during the second and third weeks of a chick's life. The reserve store, transferred from the maternal diet, must tide the chick over this critical period until vitamin intake from the diet meets requirements. Delayed or inadequate feeding increases the deficiency.—*World's Poult. Sci. J.*, Jan., 1956.

## Effects of Excessive Fluoridation

A ten-year radiographic study on bone development in man, in Texas, is reported, comparing areas where the drinking water contained 8.0 p.p.m. and 0.4 p.p.m. of fluoride. Excessive fluorides may have produced bone changes but they were seen in only 10 to 15 per cent of those exposed; such changes were slight and difficult to recognize and were unlike the findings in persons long exposed to cryolite or rock phosphate dust; and they were not associated with other physical findings except dental mottling.

Other physical changes do not necessarily occur even when the fluoride content of the bone is six times that of normal bone. There is some indication that excessive fluoride may have a beneficial effect in adult bone,

as in counteracting the osteoporotic changes of the aged.—*Am. J. Pub. Health*, March, 1956.

## Lameness in Cattle on Fescue Grass

Lameness developed in cattle which grazed tall fescue grass (*Festuca elatior* var. *arundinacea* (Schreb.) Celak) during late fall and winter months in the vicinity of Rifle, Delta, and Montrose, Colo.

Samples of this tall fescue grass were tested for ergot alkaloids and selenium. Chemical and spectrophotometric analyses indicated that alkaloids, similar to those in ergot, were present in the tall fescue grass. No selenium was detected.—[D. D. Maag and J. W. Tobiska: *Fescue Lameness in Cattle. II. Ergot Alkaloids in Tall Fescue Grass*. *Am. J. Vet. Res.*, 17, (April, 1956): 202-204.]

## Experimental Fescue Lameness in Cattle

Three experiments were conducted to determine the ability of tall fescue grass, *Festuca elatior* var. *arundinacea*, to produce lameness in cattle. In experiment one, 7 cattle were grazed on tall fescue grass pasture. Of the 7 cattle, 5 became lame.

In the second experiment, 2 cattle were fed tall fescue grass hay exclusively. Both animals became lame, 1 after 18 and the other after 27 days of continuous feeding.

In experiment three, 2 cattle were fed tall fescue grass hay while 3 similar animals were fed mountain grass hay which contained no fescue grass. The animals which were fed the fescue grass hay became lame while the animals which were fed mountain grass hay without tall fescue remained normal.

The lesions, which were dry gangrene, usually occurred in the distal extremities of the rear limbs and, less often, in the extremities of the tail and forelimbs.—[Rue Jensen, A. W. Deem, and Dallas Knaus: *Fescue Lameness in Cattle. I. Experimental Production of the Disease*. *Am. J. Vet. Res.*, 17, (April, 1956): 196-201.]

**Estrogen Content of Grasses.**—The estrogen content of 14 species of pasture and meadow grasses, cut several weeks before flowering, varied from 50 to 13,000 mouse units per kilogram of dried grass.—*Vet. Bull.*, Feb., 1956.

## Veterinary Economics

The rare appearance of the word "economics" in veterinary literature is surprising when the impact of economics on this branch of medicine is considered. Partly because of our awareness of the profession's economic vulnerability, the AVMA has developed a public information program through press, radio, and television to stimulate a greater appreciation of the value of veterinary services.

Economic appreciation, however, is a two-way street and developing a greater professional awareness of all phases of veterinary economics is an Association responsibility that has not received the attention it deserves. The immediate need is a study of the social and economic facts upon which our professional relationship to society is based.

An editorial in the JOURNAL of November, 1947, stated that "The economic side of veterinary medicine always has been and always will be a stronger driving force than the scientific and technical sides ever hope to be."

This entire editorial deserves reviewing. It places emphasis on the fact that veterinary medicine, regardless of time or place, is dedicated to safeguarding economy. With economics bearing so heavily on our profession, it becomes urgently necessary for us to be better informed on this subject.

Webster defines economics as "the science that investigates the condition and laws affecting the production, distribution, and consumption of wealth or the material means of satisfying human desires."

Because of the unique character of veterinary medicine, the accepted principles of business can not be applied to it. Nor can the concepts of medical economics be applied to the conduct of veterinary practice.

People buy medical care because they are sick; usually not because they want to but because they must. They buy it from doctors because they think doctors give better medical service than anybody else.

The reasons why people use veterinary service are quite different; therefore, as a profession we should study and understand these reasons.

### COMMITTEE ON VETERINARY SERVICE

The present AVMA Committee on Veterinary Service, first established in 1944 as the "Post-War Planning Committee," studied and reported on the many problems related to veterinary medicine that had developed in an expanding agriculture during the war and postwar periods (*see JOURNAL*, Nov., 1944:358-366; Nov., 1945:367-370; Nov., 1946:435-439).

It was during this period that some felt that the demand for veterinary service would not be sufficient to absorb the increasing numbers of graduates as well as those returning from military service.

Of interest is a statement appearing in the 1946 JOURNAL report: "The distribution of veterinarians to maintain complete veterinary service, the extension of the field of usefulness of veterinary service, and the effect of changing economic conditions upon these two problems justify continuous study...."

### TIME FOR ANOTHER SURVEY

In 1951, the Committee sent a questionnaire to approximately 6,000 veterinarians requesting information on the economics of veterinary practice. About one third of those receiving the questionnaire replied and their findings were published in the JOURNAL of June, 1954, pp. 427-435. Statisticians say this is an excellent response. Maybe it is from the standpoint of determining the significance of the figures reported but should we expect two thirds of our membership to have too little interest to reply?

The Committee on Veterinary Service is again conducting an economic survey of AVMA members engaged in practice. It has been felt that surveys of this type should be repeated every five years to permit the measurement of trends in certain fields and to keep data which are frequently called for on a current basis.

The success of this project, as well as other association activities, is dependent on the full cooperation of all members.

The Committee hopes that when members receive the 1956 survey questionnaire they will recognize the importance of this project and will take the necessary time to supply the information requested.



## ABSTRACTS

### Blood Volume of the Canine Kidney

By standardizing the vinylite corrosion technique, a method is available for the estimation of the static volumes of components of the vascular system or other tubular systems. This procedure was applied to the determination of the volumes of the extracapillary vascular systems of 23 dog kidneys. An average value of 20.4 per cent of the total weight of the kidney was obtained.

In comparing the volumes of the venous and arterial sides of the circulation, it was found that 35.0 per cent of the blood was on the arterial side and 65.0 per cent was on the venous side. An evaluation of the technique and suggestions for its application are presented.—[Logan Julian: *The Static Intravascular Extracapillary Blood Volume of the Kidney of the Dog as Estimated by the Vinylite Corrosion Technique*. *Am. J. Vet. Res.*, 17, (April, 1956): 276-278.]

### Etiology of Errington's Disease in Muskrats

Acute hemorrhagic, membranous enteritis, and focal necrosis of the liver characterize Errington's disease in muskrats. This report presents evidence that the etiologic agent is a gram-positive, spore-forming *Clostridium*.—[G. H. Lord, A. C. Todd, C. Kabat, and H. Matbiak: *Studies on Errington's Disease in Muskrats. II. Etiology*. *Am. J. Vet. Res.*, 17, (April, 1956): 307-310.]

### Exudative Epidermitis of Pigs

A clinical and pathological description is presented of a specific acute, generalized dermatitis involving the entire body surface of young swine, and characterized by sudden onset and short course; marked by hyperhidrosis, excess sebaceous secretion, exfoliation, exudation, and without pruritus; resulting in loss of skin function, extreme dehydration, rapid exhaustion, and usually terminating in death. A secondary bacterial invasion accompanies the process.

This disease has been reported with increasing frequency in Iowa and neighboring states. In some droves, it has caused serious losses. The most common names given the disease include "greasy pig," "infectious dermatitis," and "exudative dermatitis." In Europe, it is most commonly termed "pitch scab," "russ," and "soot".

The disease may affect the pig at any time between 5 and 35 days of age. The average age of infection of the pigs studied was 21 days. Any or all of the litters on a farm, and usually all of the pigs of a litter, may be affected. On one farm, half of each litter was affected. Of the 3,055 pigs in the study, 881 (28.8%) were reported as having the disease and, of these, 597 (67.8%) were reported to have died. This represents a total mortality of 19.5 per cent. The mortality varies greatly. No predisposing factors could be found,

and the course did not always follow the same pattern.

Three forms have been described: peracute, acute, and subacute. Transitions and variations among these forms may appear at any time. Except for the skin lesions, no significant gross lesions were observed at necropsy. The bacteriological studies resulted in the isolation of microorganisms from the lymph nodes of 2 pigs, which were identified as *Micrococcus epidermidis*, a saprophyte. The microscopic lesions present in the tissues stained with hematoxylin and eosin did not identify a specific causative agent.—[Lloyd D. Jones: *Exudative Epidermitis of Pigs*. *Am. J. Vet. Res.*, 17, (April, 1956): 179-195.]

### Lungworm Infection in Cattle

Twenty calves and 2 yearlings, given 5,000 to 750,000 infective larvae in single or divided doses, were susceptible to initial infection with *Dictyo-caulus viviparus*. Mature or nearly mature worms developed in all animals that lived three weeks or longer. The prepatent period varied from 21 to 30 days and the patent period from 27 to 72 days.

All of 7 animals that received 30,000 or more larvae in one dose died. Two of 13 that received fewer than 30,000 died, but *Pasteurella multocida* infection was considered a possible factor in their death. Coughing, râles, polypnea, pulmonary emphysema, expiratory grunt, pyrexia, dehydration, anorexia, diarrhea, and constipation were observed in the infected animals. Neither the rapidity of onset nor the severity of the clinical signs were proportionate to the number of larvae administered. Sublethal infections caused poor weight gains.

Significant worm loads were found in all 9 animals that died but none of the worms in the lungs of a calf that died a week after infection was macroscopically visible. The presence of some microscopic immature worms three to four weeks after infection with a single dose of larvae indicated either a natural, or a rapidly acquired, resistance. Interstitial and subpleural emphysema were constantly found at necropsy, but the degree of pneumonic involvement varied. Histopathological findings were suggestive of bronchopneumonia.

It was estimated that a single initially infected calf can contaminate a pasture with as many as 33,000,000 first-stage larvae.—[Robert Rubin and John T. Lucker: *The Course and Pathogenicity of Initial Infections with Dictyocaulus Viviparus, the Lungworm of Cattle*. *Am. J. Vet. Res.*, 17, (April, 1956): 217-226.]

## FOREIGN ABSTRACTS

### Deaths from Calcium Gluconate Therapy for Parturient Paresis

Not all the deaths incident to calcium therapy for parturient paresis result from acute heart block according to these French investigators. They report studies on 2 cows which succumbed to calcium gluconate therapy. The symptoms did not ap-



pear until the fifth hour following the intravenous administration. Prostration, violent diarrhea, sanguineous vomition, cardiac weakness, and labored breathing were observed. Death occurred within ten hours.

Experimentally, the authors reproduced this syndrome in dogs by the administration, intravenously, of high-concentration calcium solutions. They warn against the intravenous use of high concentrations of calcium salts, which appears to be the trend in the veterinary pharmaceutical industry. —[P. Gengoux and A. Pierreux: *Au Sujet des Accidents Provoqués par L'Administration Intraveineuse de Gluconate de Calcium. Rec. méd. vét.*, 131, (June, 1955): 440.]—R.F.V.

### Complications in Cesarean Sections in Cattle

The author discusses the general improvement of operative technique in cesarean sections in cows. His special operative technique has been described in dangerous complications, such as torsion of uterus, retained fetal membranes, emphysematous disintegration of the fetus, and hydrops amnii.

He also discusses cases in which repeated cesarean sections have been performed. —[M. Vandeplassche: *The Most Important Complications of Cesarean Section in Cattle. Monatsb. f. Vet.-med.*, 2, (1956): 25.]—F.K.

### Canary Pox

The presence of the virus of canary pox has been established in an aviary (in France) in which half of the birds were dead within a few weeks. It was shown, experimentally, that the strain of virus isolated was pathogenic for the sparrow, fowl, and pigeon but, in the two latter species, the infection is local and recovery spontaneous.

This virus does not immunize the pigeon against pigeon pox and, conversely, pigeon pox does not confer immunity in the pigeon against canary pox. Similarly, there is no immunity produced by canary pox in fowl against fowl pox or against pigeon pox. —[H. Jactot, A. Vallée, and L. Reinié: *Identification in France of the Virus of Canary Pox, or Virus of Kikuth. Ann. Inst. Pasteur* (1956): 28-33.]—J.P.S.

### Ergotism in Domestic Animals

Ergotism in animals, caused by the ingestion of *Claviceps purpurea*, has been recognized since the seventeenth century. Two syndromes are known.

Convulsive ergotism, most common among carnivores, horses, and sheep, is associated with nervous seizures, loss of equilibrium, chilling, paralysis of the limbs, and pain expressed by plaintive cries. It may end in death within a few hours or it may become chronic, resulting in emaciation and cachexia.

Gangrenous ergotism is seen in birds, swine, and cattle. The first symptoms are darkening and drying of pendant portions of the body—in birds, the comb, tongue, and beak. In pigs and cattle, lesions

of the legs, ears, and tail develop, first marked by cicatricial inflammation, darkening, and eventually necrosis. Abortions may occur.

The prognosis is grave. Symptomatic treatment with sedatives and the use of anti-irritant feeds and antiseptic dressings may alleviate irritation. —[J. Guilbon: *Ergotism in Domestic Animals. Rev. Patb. Gén. et Comp.*, 55, (1955): 1467-1478.]—J.P.S.

### Ergotism in Man

In the convulsive type of ergotism, there are three stages: (1) a period of tingling and spasmodic contractions of the extremities; (2) a succession of more severe attacks lasting four or five weeks; and (3) a final period of cachexia and progressive nervous collapse.

The dosage of affected flour necessary to produce ergotism may be small. Outbreaks have followed the ingestion of 500 Gm. or less of affected bread. Domestic animals fed ergot-affected bread showed symptoms of intense intoxication, tetanic convulsions, paralysis of the hindquarters, and symptoms similar to those of the disease of Carré. Death often followed within 24 hours. —[H. Lottour: *Characteristics and Diagnosis of Ergotism in Man. Rev. Patb. Gén. et Comp.*, 55, (1955): 1444-1467.]—J.P.S.

## BOOKS AND REPORTS

### Textbook on Meat Inspection

Ostertag's classic textbook on meat inspection, published in 1932, was revised by Dr. Schonberg in 1955.

Meat hygiene is thoroughly discussed in the 17 chapters. The initial chapter presents the general principles of the examination of animals before slaughter and gives the history of meat inspection. The legal regulations described in the second chapter pertain only to Germany. Various slaughter methods are described with regard to different species of animals, including horses, dogs, and poultry.

The main part of the book is devoted to actual meat inspection. Pathological changes of organs and organic systems in the course of sporadic disorders, as a result of poisoning, parasitic invasions, and infectious diseases, are discussed.

A special chapter is devoted to postmortem changes of meat.

The final part of the book deals with the control of the sausage market, adulteration of sausages and fat, and preservation of meat.

The book is supplemented by excellent illustrations. It is well written and may serve as a good source book for meat inspection. —[*Textbook on Meat Inspection (Lehrbuch der Schlachtvieh- und Fleischbunter suchung)*. By R. Ostertag. 2nd. ed. 243 illustrations. 777 pages. F. Enke, Stuttgart, Germany. 1955. No price given.]—F. KRAL.

## Dr. Casorso Receives Ralston Purina Fellowship

Dr. Donald R. Casorso, Storrs, Conn., who received the 1955-1956 Ralston Purina fellowship in veterinary science, has been selected to receive the 1956-1957 fellowship.

Dr. Casorso received his M.S. degree in poultry nutrition and management from the University of British Columbia and his D.V.M. from Ontario Veterinary College in 1955. He is taking his graduate work at the University of Connecticut, Storrs. His project is the establishment of normal histology of the avian respiratory tract and, after having established what is normal, to study the effects of respiratory diseases on the respiratory tract, and to develop a more rapid diagnostic test for respiratory diseases.

s/GEORGE H. KYD, *Publicity Division,  
Ralston Purina Company.*

## Annual Meeting of Southern Research Workers in Animal Diseases

The tenth annual meeting of the Animal Disease Research Workers in the Southern States was held on the campus of the Alabama Polytechnic Institute at Auburn, April 5-6, 1956. A total of 73 members, representing each of the 13 southern states and the Agricultural Research Service of the U.S. Department of Agriculture, were registered. Visitors present for the program sessions were from Indonesia, the Philippine Islands, Sweden, and the Alabama and Georgia agricultural experiment stations.

Thirty-six research reports were presented.

The following officers were elected for 1956-1957: W. L. Sippel, Tifton, Ga., president; P. L. Piercy, Athens, Ga., vice-president; L. R. Davis, Auburn, Ala., secretary-treasurer; and G. W. Anderson, Clemson, S. Car., director. Dr. W. E. Brock, Stillwater, Okla., is the new member of the Research Advisory Committee.

Invitations were accepted to meet at Louisiana State University in 1957 and at Oklahoma A. & M. College in 1958.

s/L. R. DAVIS, *Secretary.*

## British West Indies Veterinary Conference Planned

The Jamaica Branch of the British Caribbean Veterinary Association has announced plans for a conference to be held in Jamaica, July 28-Aug. 8, 1956. It is intended primarily for the benefit of veterinarians in the Caribbean area but veterinarians from the States and other countries are cordially invited. The tentative program includes speakers of prominence from England, Scotland, Canada, and the United States.

The first two days have no formal program,

being reserved for the arrival of delegates. Beginning Monday, July 30, the program includes sessions devoted to animal nutrition, large animal practice, parasites and their control, and small animal practice.

Among the topics and speakers are "Nutritional Deficiencies in Farm Animals," Prof. A. Robertson, University of Edinburgh, and Dr. J. A. Henderson, Ontario Veterinary College; "Animal Nutrition with Reference to Livestock Production Potential of the B.W.I.," Dr. L. E. McLaren and Mr. M. S. Motta; "Diagnosis and Control of Infectious Diseases Causing Infertility in Cattle," Dr. J. A. Henderson; "Ovarian Dysfunction in the Bovine," Dr. S. J. Roberts, Cornell University; and a panel on large animal topics.

Also, "The Borderline Between Health and Parasitic Diseases," Dr. E. L. Taylor, University of Agriculture, Weybridge, England; "Parasite Control," Mr. H. E. Harbour, Cooper Technical Bureau; "Recent Advances in Small Animal Practice" and "Virus Diseases in Small Animals," Prof. W. L. Weipers, Glasgow University.

Several excursion and entertainment features are being planned. A cordial invitation to veterinarians in the States to attend the conference is extended on behalf of the British Caribbean Association by C. L. Bent, Hon. Secretary of the Jamaica Branch. Interested persons can obtain additional information by writing to him in care of the Veterinary Division, Department of Agriculture, Hope, Kingston, Jamaica, B.W.I.

## U. S. GOVERNMENT

**Dr. Davis Heads Washington Laboratory.**—Dr. Charles L. Davis (COL '21) has transferred from his position as director of the Animal Disease Research Laboratory, Denver Federal Center, to aid in the planning of new laboratories for the Agricultural Research Service at the Research Center in Beltsville, Md.

Dr. Davis has served with the U. S. Department of Agriculture since receiving his D.V.M. degree, except for four years when he served in the Veterinary Corps of the U. S. Army during World War II. He is well known for his research on various animal diseases and the articles he has published.

Among the many professional groups of which Dr. Davis is a member are: Research Workers in Animal Diseases in North America, U. S. Livestock Sanitary Association, American College of Veterinary Pathologists, and the AVMA.

• • •  
**Dr. E. C. Cavanaugh Resigns.**—Dr. Earl C. Cavanaugh (PA '14) Johnstown, Pa., resigned from the ARS, U.S.D.A., on March 31, 1956, after serving nearly 25 years in the Department. At the time of his retirement, Dr. Cavanaugh

was chief field veterinarian in Pennsylvania. He has entered a veteran's hospital for treatment of injuries suffered during World War I.

• • •

### "Abolishing" the Veterinary Corps

The presses for this issue were stopped to carry this brief message about Defense Secretary Wilson's reported decision to liquidate the Army Veterinary Corps as an unwarranted holdover from horse cavalry days.

The stories carried by newspapers and radio recently were fallacious and distorted. The true facts and figures about the functions, responsibilities, and mission of the Veterinary Corps as essential components of both the Army and Air Force will be utilized by the AVMA to the fullest extent possible to controvert the misleading stories that have appeared, and to clear up an apparent misunderstanding now entertained at high levels in the Department of Defense concerning the true functions of veterinary officers. A full account of developments will appear in the June 15 issue.

• • •

**Dr. Caplinger Heads Meat Inspection in Philadelphia.**—Dr. William O. Caplinger (API '43) was appointed, on March 25, 1956, to succeed



Dr. William O. Caplinger

Dr. Charles E. Mootz as inspector in charge of federal meat inspection in Philadelphia. Dr. Mootz retired after more than 40 years of service with the U.S.D.A.

Dr. Caplinger has filled several positions in federal meat inspection. His first appointment, in St. Louis, Mo., was interrupted by military

service. Since then, he has served in Washington, D. C., New York City, and Buffalo, as well as in the Trade Label Section on the meat inspection staff at Washington, D.C.

*S/F. L. Wilde, Administrative Officer.*

• • •

**Research Applications to Be Expedited.**—The Public Health Service has announced a new procedure to expedite the processing of research grant applications for those requests which do not exceed \$2,000 plus indirect costs, and which do not ask support for more than one year. Such applications will be accepted and processed on receipt and are not, therefore, subject to the usual deadlines for submission prior to review.

Council recommendations can be expected on these applications within one to four months from the time of submission. These procedures do not apply to requests for supplements to existing grants.

Address all applications, as well as requests for forms or additional information, to the Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

• • •

**Veterinary Personnel Changes.**—The following changes in the force of veterinarians in the U.S.D.A., Agricultural Research Service are reported as of April 14, 1956.

#### TRANSFERS

Joseph N. Allred, from Ogden, Utah, to Salt Lake City, Utah.

William O. Caplinger, from Washington, D.C., to Philadelphia, Pa.

C. C. Hamilton, from Suffolk, Va., to Norfolk, Va.

George Harlan, from Coffeyville, Kan., to Madison, Ind.

Sheldon Z. Kevak, from Mason City, Iowa, to St. Louis, Mo.

## AMONG THE STATES AND PROVINCES

### Delaware

**New Castle County Association.**—At the regular monthly meetings of the New Castle County Veterinary Medical Association, held in the Hotel Rodney in Wilmington, the following programs have been presented. At the January meeting, Drs. James West, Milford, and Thomas Jeeter, Dover, presented illustrated talks on Army veterinary service during the recent wars.

Dr. C. C. Palmer, Newark, read excerpts of his "History of Veterinary Medicine in Delaware" at the February meeting.

At the March meeting, Dr. Herbert Wolford, West Grove, Pa., showed slides taken of the Rose Bowl game and of various side trips along the way. This was followed by a discussion of the rabies problem in the county.

Dr. Leonard Krawitz, Philadelphia, addressed the group at the April meeting. He discussed diseases of the eye, with illustrations. Dr. W.

R. Teeter, state veterinarian, reported on the rabies control problem. He remarked particularly on the excellent coverage by the press.

s/E. J. HATHAWAY, *Secretary*.

### Georgia

**South Georgia Association.**—On April 15, 1956, the South Georgia Veterinary Medical Association met in Tifton. At the business session, Dr. Frank Mitchell, Albany, was appointed secretary-treasurer to fill out the unexpired term of Dr. William L. Sippel, Tifton.

The professional program consisted of a talk on sheep husbandry by Dr. W. C. McCormick of the Animal Husbandry Department of the Experiment Station, Tifton.

Dr. Cox demonstrated tests for detection of insecticide poisoning, blood-urea nitrogen, and hydrogen cyanide poisoning. Dr. Frank Mitchell explained the value of semen examination of herd bulls. The value of the Hotis test to the dairyman was discussed and this procedure was demonstrated. Dr. William L. Sippel spoke on distemper inclusion bodies and described the technique for demonstrating these in clinical cases. The value of routine bacteriological techniques in veterinary practice, especially poultry practice, was discussed. Several laboratory demonstrations were also presented.

s/WILLIAM L. SIPPEL, *Secretary*.

### Idaho

**Southwestern Association.**—The Southwestern Idaho Veterinary Medical Association met in Nampa, March 29. Reports were given on *Elaeophora schneideri*, ornithosis, research on sheep vibriosis, and progress of the brucellosis eradication program in Idaho.

s/MICHAEL INVERSO, *Secretary*.

### Iowa

**East Central Society.**—The East Central Iowa Veterinary Medical Society held a dinner meeting at Zuber's Dugout Restaurant in Homestead on April 12. The program was under the auspices of the Johnson County Veterinary Association.

Dr. C. M. Berry (Ph.D.), Department of Hygiene, University of Iowa, told of the new Institute of Agricultural Medicine at the University of Iowa and pointed out how the veterinary profession could help this department. A motion picture, "Anthrax in Ohio," was also shown.

s/GUY S. JONES, *Secretary*.

### Illinois

**Northern Association.**—The thirty-fifth annual meeting of the Northern Illinois Veterinary Medical Association was held April 18, 1956, at the Hotel Faust in Rockford.

The program included the following speakers and their subjects: John R. Dick, Fort Dodge Laboratories, Fort Dodge, Iowa (swine enteritis); Alfred M. Olson, Morrison (swine health);

E. E. Slatter, Indianapolis, Ind. (certification in swine enteritis); and the following panel on dairy cattle problems: Herbert Marsh, Princeton, moderator; O. W. Nelson, DeKalb; John McCaslin, West Chicago; and James Welch, Clinton, Wis.

s/J. M. NELSON, *Secretary*.

### Kansas

**Kansas State Staff to Aid India.**—Kansas State College has signed a \$732,000 contract with the International Cooperation Administration to furnish technical advice on agriculture, animal husbandry, and veterinary science to the Indian states of Madhya Pradesh, Hyderabad, Bombay, Saurashtra, and Kutch. The India Ministry of Food and Agriculture requested technical aid to strengthen Indian agricultural institutions.

Families of the nine Kansas State staff members will accompany them on their 18-month assignments.

### Maine

**State Association.**—The spring meeting of the Maine Veterinary Medical Association was held at the Penobscot Valley Country Club, Orono, on April 11.

After motion pictures on poultry inspection and fishing were shown, the following program was presented: F. Langdon Davis, Augusta (Cornell midwinter conference); G. W. Breed, Augusta (disease control in New England); Calvin Newman, Island Falls (demonstration of metal detector); and a panel discussion (milk fever and acetonemia) with Grant Savage, Waterville, as chairman, and the following members: Dale E. Smith, Caribou; H. D. Bither, Westbrook; and Dana Dingley, Farmington.

Dr. David L. Coffin, Angell Memorial Animal Hospital, Boston, was guest speaker at the banquet.

s/J. F. WITTER, *Secretary*.

### New Jersey

**Southern Association.**—At a recent meeting of the Southern New Jersey Veterinary Medical Association, the following officers were elected: G. W. Tyler, Pitman, president; O. K. Fox, Mount Holly, vice-president; W. E. Snyder, Haddonfield, secretary; and F. J. Olbrich, Blackwood, treasurer.

s/W. E. SNYDER, *Secretary*.

**Alampi Named as Secretary of Agriculture.**—The appointment of Phillip Alampi of West Englewood as New Jersey Secretary of Agriculture was announced recently by Governor Meyner and President Rapp of the State Board of Agriculture. Mr. Alampi will take office July 1, 1956, succeeding Dr. Willard H. Allen who has served since 1937 and retires for health reasons.

Mr. Alampi, a well-known agricultural authority, is at present farm and garden director of station WRCA and WRCA-TV in New York

City. Previously, he was with radio station WJZ and taught vocational agriculture for ten years. He has also operated a poultry farm since 1935.

#### New York

**New York City Association.**—The May 2 meeting of the Veterinary Medical Association of New York City, Inc., was held at the New York Academy of Sciences. After the film, "Surgical Removal of *Dirofilaria immitis*," was shown, Dr. Robert S. Brodey, School of Veterinary Medicine, University of Pennsylvania, presented a paper on "A New Concept of the Etiology and Pathogenesis of Canine Pyometra," with illustrations.

S/C. E. DeCAMP, Secretary.

#### North Dakota

**Dr. Robinson Honored.**—Dr. John Robinson (CVC '03) a practitioner at Garrison for 52 years, and also a member of the AVMA for 52 years, was honored on March 2 by the unveiling of his picture at a ceremony by the North Dakota Agricultural College Saddle and Sirloin Hall of Fame. Dr. Robinson has been a member of the North Dakota Livestock Sanitary Board for 46 years and chairman of the Board the last 12 years. He has also been active in the promotion of F.F.A., 4H, and other youth movements.

### FOREIGN NEWS

#### British West Indies

**Activities of Trinidad Branch of Caribbean Association.**—New officers of the Trinidad Branch of the British Caribbean Veterinary Association are Drs. R. L. Hutson, president; S. P. Bennett, president-elect; and F. O. Gonzales, secretary.

At the September, 1955, meeting of the Association, two films from the AVMA film library, "Gelfoam in Veterinary Surgery" and "Today's Chicks," were shown and were much appreciated by the audience. In November, Dr. P. R. Ellis, of the Pan American Sanitary Bureau, Rio de Janeiro, Brazil, gave a lecture on the aims and objects of the foot-and-mouth disease control program, and the methods of differential diagnosis.

In March, 1956, Dr. R. L. Stone, general practitioner from Albion, N. Y., visited the island and attended our meeting. A friendly discussion was enjoyed on the aspects of veterinary medicine in the tropics as compared with those of North America.

S/S. P. BENNETT, Correspondent.

#### Greece

**Sixth Congress on Hydatidosis.**—The Sixth International Congress on Hydatid Disease will

be held in Athens, Greece, Sept. 14-18, 1956, under the direction of Dr. M. Maccas. An entire section will be devoted to the veterinary aspects of hydatidosis and veterinary contributors to the Congress are being solicited. Titles of communications should be sent to the secretary of the Congress as soon as possible to enable printing of programs. Information can be obtained from the secretary, Dr. B. Kourias, Croix-Rouge Hellenique, 1 Mackenzie King St., Athens, Greece.

S/R. F. VIGUE.

### STATE BOARD EXAMINATIONS

**Arizona.**—The Arizona State Board of Veterinary Examiners announces that examinations will be held on June 20-21, 1956, at 217 Capitol Building, Phoenix, beginning at 8:30 a.m. on June 20. Application forms may be obtained by writing the Arizona State Board of Veterinary Examiners, 217 Capitol Bldg., Phoenix, Ariz. All completed application forms must be in before June 10.

**Florida.**—The Florida State Board of Veterinary Examiners will hold examinations on June 18-20, 1956, at the Everglades Hotel, Miami. Address all inquiries to Dr. E. L. Matthews, secretary, Box 141, Palatka, Fla.

**Illinois.**—The Veterinary Division, Department of Registration and Education, Springfield, Ill., advises that examinations for registration as licensed veterinarians will be held on June 25-27, 1956, and on Dec. 5-6, 1956. Applications should be on file at the Veterinary Division, Department of Registration and Education, Springfield, at least 15 days before date of examination. The examinations will be held in Chicago; necessary forms may be obtained by writing to: Veterinary Division, Department of Registration and Education, Springfield, Ill.

**Montana.**—The Montana Board of Veterinary Medical Examiners will hold examinations on June 25-27, 1956, in the auditorium of the Montana Veterinary Research Laboratory Building, Montana State College, Bozeman. Application blanks may be obtained from: Dr. J. W. Safford, Montana Board of Veterinary Medical Examiners, Capitol Station, Helena, Mont.

**West Virginia.**—The West Virginia Board of Veterinary Medical Examiners will hold an examination on June 28, 1956, at the Stone-wall Jackson Hotel, Clarksburg, W. Va. The completed applications must be returned to the secretary not later than ten days before the examination date. Requests for applications and additional information should be addressed to: Dr. Isaac H. Maxwell, Secretary, West Virginia Veterinary Examining Board, Lost Creek, W. Va.



## VETERINARY MILITARY SERVICE

### Graduates of Oak Ridge Veterinary Radiological Health Course



First row (front, left to right)—Lt. Col. Henry J. Lindenstruth, QM Inspection Service Command, Chicago; Capt. Thurman S. Grafton, Gunter Air Force Base, Montgomery, Ala.; Col. Daniel S. Stevenson, Oakland Army Terminal, San Francisco, Calif.; Dr. Ralph T. Overman, director of studies at the Institute; Dr. Charles E. Stevens, Department of Physiology, University of Minnesota; Lt. Col. Walter T. Carl, instructor at the Institute; Lt. Col. Don L. Mace, Fort Detrick, Md.; Major William C. Moughon, Parks Air Force Base, Calif.; and Lt. Col. Kenneth F. Burns, Fourth Army Medical Laboratory, Fort Sam Houston, Texas.

Second row—Major Val. A. Tomayko, Oakland QMMC, Alameda, Calif.; Major Howard C. Poulin, Fort Belvoir, Va.; Capt. Hilding M. Strandberg, Travis Air Force Base, San Francisco, Calif.; Capt. Warren E. Collins, March Air Force Base, Calif.; Capt. George D. Smith, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio; Capt. Dale D. Boyd, Ardmore Air Force Base, Okla.; Capt. George M. Rose, Malmstrom Air Force Base, Great Falls, Mont.; Major Henry M. Miller, QM Market Center, Columbia, S. Car.; and First Lt. William J. Roenigk, Surgical Research Unit, Brooke Army Medical Center, Fort Sam Houston, Texas.

Third row—Lt. Col. Ralph D. Chadwick, Subsistence Operations Office, QMISC, Chicago; Major M. Nold, Oak Ridge Institute of Nuclear Studies, Inc.; Capt. John H. Benson, Seattle Food Analysis Branch, Sixth Army, Seattle, Wash.; Capt. William H. Watson, Jr., Gunter Air Force Base, Montgomery, Ala.; Lt. Col. Bernard F. Trum, Oak Ridge Institute of Nuclear Studies, Inc.; Capt. Norman M. Borthwick, Kirtland Air Force Base, N. M.; Capt. Harrison S. Martin, AMEDS Meat and Dairy Hygiene School, Chicago; Capt. Douglas F. Moe, Robins Air Force Base, Georgia; and Major U. S. Grant Kuhn, Oak Ridge Institute of Nuclear Studies, Inc.

## DEATHS

**\*J. Leonard Axy** (CVC '03), 79, Indianapolis, Ind., died on April 17, 1956, after a prolonged illness.

Born in Guilford, Ind., July 28, 1876, Dr. Axy was active and prominent in both civic and professional affairs in his state, and nationally, for more than a half-century. He attended National Normal University of Lebanon, Ohio, and taught school in his native Dearborn County before entering Chicago Veterinary College. Following graduation, he was a member of the faculty of Cincinnati Veterinary College from 1903 to 1919. He also practiced in Lawrenceburg for many years, was mayor there from 1910 to 1914, and served in the Indiana legislature from 1917 to 1919.

From 1933 to 1945, Dr. Axy was state veterinarian, the longest continuous service in the history of the post. He joined the AVMA in 1908, was elected chairman of the second House of Representatives session at Oklahoma City in 1935, and served on the Executive Board from 1940 to 1948 as a member from District III (Illinois, Indiana, Wisconsin). He also served

on the Committee on Legislation from 1926 to 1931 and again from 1937 to 1940, being its chairman in 1939-1940.

Dr. Axy was active in the Indiana State



Dr. J. Leonard Axy

V.M.A. which selected him as general chairman of the committee on local arrangements for the AVMA convention in Indianapolis in



1941. He and Mrs. Axby (*nee* Dollie Watts), a native of Lawrenceburg, were married in 1905 and celebrated their golden wedding anniversary last September. For the past 23 years, they had lived in Indianapolis where Dr. Axby was engaged in private practice most of the time since retiring from state service in 1945.

Dr. Axby was a member of the state veterinary examining board from 1917 to 1921 and was a past-president of the U. S. Livestock Sanitary Association. He was also a member of the Hamlin Chapel Methodist Church at Lawrenceburg and a charter member of the Kiwanis Club there.

Funeral services were conducted on April 21, with interment at Greendale Cemetery in Lawrenceburg.

Surviving are the widow, Mrs. Dollie Axby, and one daughter, Mrs. E. J. Oertling of Indianapolis.

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★**Charles R. Donham**, 57, West Lafayette, Ind., former head of the veterinary science department at Purdue University and its assistant head in recent years, died on April 24, 1956. He had been partially incapacitated with heart trouble for several years and had suffered two attacks recently.

Born at Rockport, Ind., Aug. 1, 1898, Dr. Donham received his early education in local schools and his D.V.M. degree from Iowa State College in 1921. He practiced in Iowa for



Dr. Charles R. Donham

a year and then went to Oregon State College where he taught and received his Master's degree in 1928, being assistant professor of veterinary medicine there in 1929 when he left to accept a similar position in the veterinary science department at the University of Minnesota. He remained at Minnesota until 1935 when he accepted a position on the faculty of the College of Veterinary Medicine at Ohio State University.

Dr. Donham became head of the veterinary science department at Purdue in 1940 and remained in that capacity until he voluntarily stepped down in 1950. He was particularly well known for his research and control work on brucellosis on which he published many articles; also for his work on sterility in cattle and salmon poisoning in dogs, the latter being done while he was at Oregon State College.

From April, 1951, to January, 1952, Dr. Donham served as editor *ad interim* of the JOURNAL. He was a veteran of World War I, a member of the AVMA, Indiana V.M.A., U. S. Livestock Sanitary Association, Conference of Research Workers in Animal Diseases, Rotary Club, and the First Methodist Church of West Lafayette. He also belonged to Sigma Xi and other professional and social fraternities.

Services were held at West Lafayette on April 26 and interment was at Ames, Iowa.

Surviving with the widow, the former Margaret H. Lysinger, are a son, Dr. James C. Donham, a graduate of, and now on the veterinary faculty at, Ohio State University; a daughter, Mrs. J. F. Jamison, Bay Village, Ohio; and a sister, Mrs. Lewis Ludwig, Dale, Ind.

• • •

★**Milton A. Bosley** (USC '17), 63, Washington, D. C., died March 30, 1956. Dr. Bosley was a small animal practitioner. He was admitted to the AVMA in 1918.

**Daniel Ellinwood** (TH '16), Amory, Miss., died Nov. 11, 1955. Dr. Ellinwood was a general practitioner.

**Parker J. Flagg** (ONT '13), 66, Newport, Maine, died Oct. 13, 1955. Dr. Flagg spent most of his active career doing routine testing for the state and federal governments.

**Thomas L. Kelly** (ONT '96), 84, Port Clinton, Ohio, died Feb. 25, 1956. Dr. Kelly had retired four years ago. His widow survives.

**James G. Kerr** (UP '08), 80, Beaumont, Texas, died Jan. 30, 1956. Dr. Kerr had retired from practice several years ago. He had been a member of the AVMA for many years.

**George J. Kiger** (KCV '14), 67, Alta Vista, Kan., died March 26, 1956. Dr. Kiger was a veteran of World War I, had served with the U. S. BAI for several years, and had practiced in Alta Vista for more than 30 years. He was a member of the Kansas State Veterinary Medical Association and had been a member of the AVMA. Dr. Kiger is survived by his widow; a son, D. G. Kiger (KSC '51), of Hebron, Neb.; and two grandchildren.

★**Dan Willmot** (UVC '04), 84, Chickasha, Okla., died March 30, 1956. Dr. Willmot had practiced for more than 54 years. He was admitted to the AVMA in 1917 and was made a life member in 1954.

★Indicates members of the AVMA.

# SURITAL® SODIUM

Reprints from the JOURNAL of the American Veterinary Medical Association,  
vol. 124, No. 922, Jan., 1954, pp. 19-20.

**A Note on the Use of Surital Sodium Anesthesia in Swine**  
H. W. DUNNIE, D.V.M., Ph.D., and Captain S. C. BENBROOK, V.C., U.S. Army  
East Lansing, Michigan

A Note on the Use of Surrogate  
W. DUNNE, D.V.M., Ph.D., and Captain S. C. BERT  
East Lansing, Michigan

**Note on the Use of Surfactants**  
W. DUHNE, D.V.M., Ph.D., and Captain S. [illegible]  
East Lansing, Mich.

THIS NEED for a satisfactory antibiotic in swine practice has long been recognized by swine practitioners and research workers throughout the nation. I recently examined the antibiotics available and to my regret concluded that some phase of application of these drugs to the swine was contraindicated. It may be either toxic, irritating to frequent use, or the occurrence of resistance was long and increased time-consuming situation forcing an abandonment of the antibiotic. The situation was compounded by the fact that the swine was not recovering from antibiotic.

[illegible]

# Surital Sodium Anesthesia in Canine Surgery

**Surital Society**  
**in Canine Surgery**  
H. R. ROBERTS, D.V.M.: W. E. WENDT, D.V.M.: C. C. WAGNER, D.V.M., M.S.:  
T. F. REUTHER, D.V.M., M.S.  
JOURNAL of the American Veterinary Medical Association  
— June, March 1961, pp. 151-155.

OBERTS, D.V.M.: W. E. WENDT, D.V.M.: C. T. F. REUTNER, D.V.M. M.S.  
 Report from the JOURNAL of the American Veterinary Medical Association  
 Vol. CXVIII, No. new, March, 1951, pp. 151-155.  
 Association, vol. 122, No. 913, Mar., 1955.

Reprinted from the JOURNAL of the American Veterinary Medical Association, Vol. 64, No. 1, 1953, p. 100.

# Dosage Studies of Surital Sodium in Dogs

ROBERT F. BORGMAN D.V.M., M.S.  
The North Carolina

RESULTS

Studies of Surital  
ROBERT F. BORGMAN D.V.M., M.S.  
Asheville, North Carolina

RECENTLY, a new thiobarbiturate, surital sodium, has been offered for limited clinical trial. Clinical reports have shown surital sodium to be: an excellent anesthetic for operations of short duration in dogs. Its anesthesia is smooth and relatively free from excitement and irritability. . . . When injected intravenously at hourly intervals,

**RESULTS**

A total of 11 dogs were i  
average dose necessary for  
6.5 mg. of survival sulfate p  
weight. Of the 2 dogs an

Results of Survival So

**Surital Sodium, A New Anesthetic and Hypnotic**  
Studies in Dogs

**Psychic and Hypnotic Studies in Dogs**  
T. F. REUTNER, D.V.M., M.S., and O. M. GRUZHIT, M.S., M.D.  
Detroit, Michigan  
Journal of the American Veterinary Medical Association,  
Vol. 108, October, 1944, pp. 227-280.

T. F. REUTNER, D.V.M., M.S., and O. M. GRUNZIT, M.S.,  
Detroit, Michigan  
Reprint from the Journal of the American Veterinary Medical Association,  
Vol. 43, 112, No. 10, October, 1949, pp. 257-260.

# Use of Surital Sodium and Curare in Small-Animal Surgery

Small-Animal  
W. O. Brinker, D.V.M., M.S.  
Michigan State College  
East Lansing, Mich.

Michigan  
East Lansing, Mich.  
Reprint, The North American Veterinarian, Vol. 32, December, 1931.

Reprinted from VETERINARY MEDICINE, Vol. XLV, No. 3, March 1940.

# Surital Sodium And Morphine Anesthesia In Canine Surgery

C. YOUNG, JR., D.V.M., and F. E. EADS, D.V.M., M.S., Detroit, Michi.

In most instances, Surital Sodium is used in conjunction with Morphine.

W. C. YOUNG, JR., D.V.M. and F. E. EADS  
D.V.M., M.S., Detroit, Michi

W. C. YOUNG, JR., D.V.M., M.S. In mind education. How  
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THE use of "artificial" sodium (sodium 2-allyl-5-1-methylthio-1,2-thioaraburate), a recently developed ultra short acting barbiturate, has been reported by several workers. It would be called the "sodium of the 20th century" and in penitentiaries could be considered the "sodium of the 21st century."

I. No. 8, p. 365, August 19

Reprinted from VETERINARY MEDICINE, Vol. 1, No. 8, p. 111, 1956.

## Intrathoracic Anesthesia In Cats

MARK STERNFELS, D.V.M., Mount Vernon, New York

Surgery performed under anesthesia by intrathoracic administration of 10% Euthal. Teeth cleaning and removal of teeth. Removal of teeth.

# Thoracic Anesthesia In Cats

**MARK STERNFELS, D.V.M., MOUNT**

**When a human patient is suffering from**

**an ailment which calls for surgical inter-**

**vention, laboratory techniques are employed to**

**diagnose the disease. Preventive studies are made**

**and in the laboratory, preventive agents are found**

**to destroy and salve lesions are given to**

**prevent further lesions for prevention of the surgical**

**dehydration.**

**The anesthetic is usually part of the surgical**

**procedure performed under**

**intrathoracic administration,**

**which includes**

**cleaning and**

**removal of ex-**

**posed vessels, teeth,**

**abscesses, and**

**removal of**

**protrusions, and**

**removal of**

**teeth, and for x-ray**

**diagnosis.**

**Diagnosis in Dogs and Cats**

**for 20 Patients**

The anesthetic is usually part of the surgical procedure and is used to prevent pain and discomfort during the procedure.

**Surital Sodium Anesthesia in Dogs and Cats**

**A Symposium Covering 7522 Patients**

F. E. EADS, D.V.M., M.S., Detroit, Mich.

is one of approximately 15 times that the results were about 10% better than those reported by other investigators.

**Surital Sodium Anesthesia**  
**A Symposium Covering 7522 Pages**  
F. E. EADS, D.V.M., M.S., Detroit, Mich.

**Surital Sodium Anesthesia** **Covering** **A Symposium** **Detroit, Mich.**  
F. E. EADS, D.V.M., M.S., Editor

Although intravenous anesthesia is one of the oldest means of rendering patients insensible to pain, the method has been available to the veterinarian for but 13 years. So far, studies only within the last 10 years have shown it to be the most effective and safe anesthesia as known. The method is used when a condition of opium was given by means of an

covery. They estimate that the results are approximately 15 times that of the dog. Surital results are nearly as good as those given above in dogs. There seems to be less danger in the use of Surital than appears to be the case. The indications mentioned where

Sept.-Oct., 1935

From THE CALIFORNIA VETERINARIAN

(reprinted from THE CALIFORNIA VETERINARIAN, Sept.-Oct., 1935)

(Reprinted from THE CALIFORNIA VETERINARIAN, Sept.-Oct., 1953)

**These and other publications on Surital available on request**

Department of Veterinary Medicine

**PARKE, DAVIS & COMPANY**

**DETROIT 32, MICHIGAN**

## ORGANIZATION SECTION

Officers and Subcommittee Chairmen of Committee on Local Arrangements  
AVMA Convention, San Antonio—October 15-18



Seated (left to right)—Colonel H. R. Ellis, General Secretary; Dr. A. R. Rees, Jr., General Chairman; Mrs. G. W. Parker, Vice-Chairman, Women's Activities; Mrs. U. E. Marney, Chairman, Women's Activities; Mrs. H. R. Ellis, Co-Vice-Chairman of Women's Activities; Dr. U. E. Marney, Vice-General Chairman, and Dr. H. E. Kingman, Jr., Assistant Executive Secretary, AVMA.  
Standing (first row)—Major W. C. Nichols, Major G. R. Farmer, Dr. W. W. Buck, Dr. R. F. Smart, Lt. Col. K. F. Burns, Dr. J. N. McCamish, Dr. M. L. Matthews, Dr. R. A. Culpepper, Dr. J. R. Bebinger, and Dr. L. H. Weaver.  
Standing (second row)—Dr. W. E. Hauser, Col. J. D. Manges, Dr. R. D. Brown, Dr. J. D. Robbins, Dr. E. L. Soyars, Dr. P. B. Blunt, Dr. G. W. Parker, Lt. Col. C. L. Gould, and Dr. R. M. Botard.  
Dr. W. C. Brock and Dr. E. A. Grist, ex-officio members of the Local Committee, were not present when the picture was taken.

### WOMEN'S AUXILIARY

President—Mrs. Earl N. Moore, 636 Beal Ave., Wooster, Ohio.

Secretary—Mrs. F. R. Booth, 3920 E. Jackson Blvd., Elkhart, Ind.

**How Members Can Best Serve Their State Auxiliaries.**—Most wives of veterinarians look forward to state auxiliary meetings, partly because it means "getting away" for a few days of vacation, with an opportunity to see old friends and make new ones. But we must not forget the work and hours that go into the planning of these enjoyable meetings.

Now let us consider how best we can help our state auxiliary. If one is appointed to a committee, make it a point to be present at all committee meetings. Do not be afraid to bring out new ideas. Perhaps they will not work out for this particular meeting, but they can be kept in mind for future use.

I am sure any corps of officers will appreciate constructive criticism. Their aim is to present the best meeting for everyone concerned.

At various smaller district meetings, discuss the state meetings and drop a friendly letter to

your president telling her your ideas. She will be happy to know you are interested.

With every steak dinner come the dishes, so with an auxiliary meeting is the business to be carried on. Be courteous to your officers and sit through the entire business meeting. Really, here is where our aims and ideals as wives of veterinarians are formulated and carried out. For instance, the Research Fund is of prime importance to the future of veterinary medicine. It must continue to grow. Be prepared to discuss it by being familiar with the subject. In the business meeting, you will learn how your auxiliary is helping to further your husband's profession.

If your president calls for discussion from the floor, be active in this discussion. It makes for a going, growing organization. Above all, your attendance is most important.

S/(MRS. L.) LUCILE PROCTOR, Oelwein, Iowa.

• • •

**Illinois Auxiliary.**—The spring meeting of the Women's Auxiliary to the Northern Illinois

(Continued on p. 20)

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## ORGANIZATION SECTION

(WOMEN'S AUXILIARY—continued from p. 18)

Veterinary Medical Association was held April 18 at the Faust Hotel in Rockford.

The women held their luncheon at the Women's Club and enjoyed the cocktail hour at the Hotel Faust, followed by the banquet with their husbands in the evening.

S/MRS. J. M. NELSON, *Secretary*.

**West Virginia Auxiliary.**—The Women's Auxiliary to the West Virginia Veterinary Medical Association met for a social meeting at the Greenbrier Hotel in White Sulphur Springs on Feb. 19-20, 1956.

On Sunday evening members of the Auxiliary and of the West Virginia V.M.A. enjoyed a banquet.

Following a tour of the Hotel on Monday morning, a luncheon was held in the Terrace Room. After the luncheon, Mrs. Edgar F. Dickson of Ronceverte, W. Va., gave a talk on hobbies.

Twenty members and several guests were present.

S/MRS. JAMES MANN, *Secretary*.

## APPLICATIONS

### Applicants—Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent association shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

**BECK, JOSEPH**  
166 Greenwood St., Newton Centre, Mass.  
D.V.M., Middlesex Veterinary College, 1943.

**BERNSTEIN, MYRON**  
600 S. Skokie Valley Rd., Glencoe, Ill.  
D.V.M., Middlesex University, 1944.

**BOURGEOIS, ROBERT**  
cité Témiscouata, Notre Dame du Lac, Que.,  
D.V.M., University of Montreal, 1955.

**BURDIO, WLADIMIR**  
506 Houston, Muskogee, Okla.  
D.V.M., University of Munich, Germany, 1949.

**CORWIN, MERVIN S.**  
373 Main St., East Orange, N. J.  
D.V.M., Middlesex University, 1947.

**DeWITT, JAMES C.**  
634 S. Washington, North Attleboro, Mass.  
D.V.M., Middlesex University, 1944.

**DOAK, J. BRAXTON**  
4505 W. Jefferson, Dallas, Texas.  
D.V.M., Texas A. & M. College, 1949.

**EAGLE, WALLACE R.**  
21 South Park Blvd., Glen Ellyn, Ill.  
D.V.M., Middlesex University, 1944.

**FISCHER, GEORGE W.**  
6925 S. Flores, San Antonio, Texas.  
D.V.M., Texas A. & M. College, 1944.

**HALPERT, I. LAWRENCE**  
230 Broadway, Saugus, Mass.  
D.V.M., Middlesex University, 1945.

**HERNADY, ERNEST S.**  
9211 Niles Place, Afton, Mo.  
D.V.M., University of Bologna, Italy, 1940.

**KURYLAS, ROMAN**  
B. H. Animal Hospital, Rt. 2, Rapid City, S. Dak.  
D.V.M., Veterinary College of Hannover, Germany, 1951.

**LAGER, ARTHUR E.**  
4 Paradise Rd., Salem, Mass.  
D.V.M., Middlesex University, 1944.

**LIND, HARRY**  
346 State St., Marion, N. Car.  
D.V.M., University of Tartu (Dorpat), Estonia, 1956.

**LINDER, ABRAHAM**  
6302 W. Broad St., Richmond, Va.  
D.V.M., Middlesex University, 1944.

**MONTGOMERY, E. L.**  
Belton, Mo.  
D.V.M., Kansas State College, 1943.

**PARVEY, EDGAR I.**  
5872 Delmar Blvd., St. Louis, Mo.  
D.V.M., Middlesex University, 1944.

**PRICE, CHARLIE F.**  
Blanco, Texas.  
D.V.M., Texas A. & M. College, 1954.

**REA, TED**  
Box 464, Albuquerque, N. M.  
D.V.M., Texas A. & M. College, 1943.

**RUSSO, EDWIN F.**  
P.O. Box 49, Annandale, Va.  
D.V.M., Middlesex University, 1946.

**SACKS, MELVIN**  
4321 N. Harlem Ave., Chicago, Ill.  
D.V.M., Middlesex University, 1944.

**SCHERF, PETER**  
P.O. Box 181, Yale, Iowa.  
D.V.M., Veterinary College of Hannover, Germany, 1944.

**SCHWARTZ, LEON G.**  
1808 W. Addison St., Chicago, Ill.  
D.V.M., Middlesex University, 1944.

**SELIGMAN, JACK**  
4712 W. North Ave., Chicago, Ill.  
D.V.M., Middlesex University, 1944.

**SENYCIA, PAUL**  
2249 W. Iowa St., Chicago, Ill.  
D.V.M., Veterinary Academy, Lemberg, Poland, 1944.

**SMITH, HOWARD A.**  
476 Bedford St., Lexington, Mass.  
D.V.M., Middlesex University, 1945.

**TILLERY, JOE B.**  
342 Meadowbrook Rd., Jackson, Miss.  
D.V.M., Texas A. & M. College, 1952.

**VESSELINOVITCH, STAN D.**  
Ontario Veterinary College, Guelph, Ont.  
D.V.M., University of Belgrade, Yugoslavia, 1949.

**WEINBURG, LeROY S.**  
9842 S. Western Ave., Chicago, Ill.  
D.V.M., Middlesex University, 1943.

(Continued on p. 24)



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1. As a growth promotant, in poultry and swine rations.
2. As a primary treatment for swine bacterial enteritis in herds showing no systemic reaction.
3. As a complementary treatment for swine bacterial enteritis in herds showing systemic reactions.
4. To minimize relapses.
5. To minimize stunting effects following the outbreak of systemic diseases.





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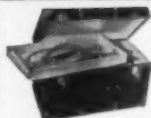
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(APPLICATIONS—continued from p. 20)



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| <input type="checkbox"/> folder N-4<br>syringe cases | <input type="checkbox"/> folder N-5<br>sign letters | <input type="checkbox"/> folder N-6<br>firing irons |

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WINOKUR, SAMUEL J.

2320 E. 79th St., Chicago, Ill.  
D.V.M., Middlesex University, 1944.

WIRSZCZUK, WALTER

2339 N. Kostner Ave., Chicago, Ill.  
D.V.M., Veterinary Academy, Lemberg, Poland, 1944.

WOOD, GEORGE S.

1345 W. 79th St., Chicago, Ill.  
D.V.M., Middlesex University, 1944.

### Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorser.

### First Listing

SULLIVAN, WILLIAM G.

606 Kinnikinnick Dr., Colorado Springs, Colo.  
D.V.M., Alabama Polytechnic Institute, 1932.  
Vouchers: R. R. Miller and W. O. Kester.

### Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorser.

### Second Listing

ANDERSON, GERALD A., 98th Tactical Hospital,  
Lincoln Air Force Base, Lincoln, Neb.

GEORGE, RALPH W., 1604 S. Washington Ave., Mobile,  
Ala.

WATSON, WILLIAM H., Jr., 1147 Fremont Drive,  
Montgomery, Ala.

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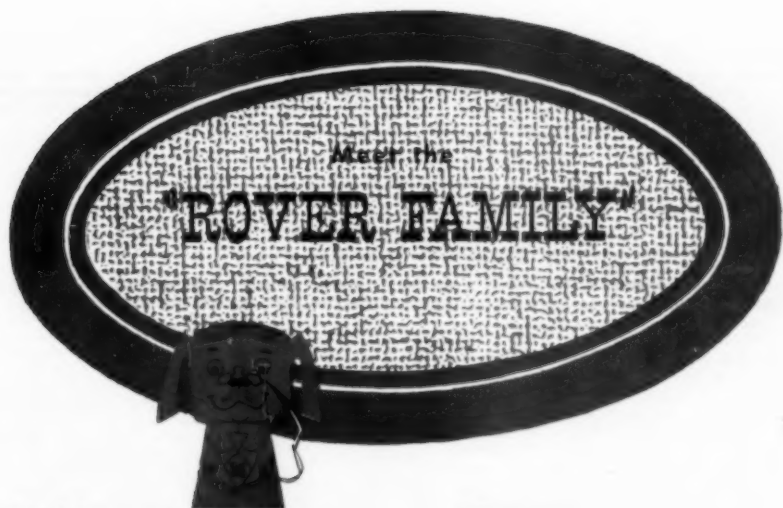


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## COMING MEETINGS

- Kansas State College. Conference for veterinarians. New veterinary hospital, Kansas State College, Manhattan, June 1-2, 1956. E. E. Leasure, dean.
- Wyoming Veterinary Medical Association. Annual meeting. Masonic Hall, Pinedale, June 9-11, 1956. J. F. Ryff, P.O. Box 960, Laramie, secretary.
- California State Veterinary Medical Association. Annual meeting. Hotel Statler, Los Angeles, June 10-13, 1956. Charles S. Travers, 3004 16th St., San Francisco, executive secretary.
- Georgia Veterinary Medical Association. Fiftieth anniversary meeting. Hotel Ogleshorpe, Savannah, June 10-12, 1956. C. C. Rife, 305 Lindberg Dr., N.E., Atlanta 5, secretary.
- Ohio State University. Conference for veterinarians. Union Building, Ohio State University, Columbus, June 13-14, 1956. John H. Helwig, chairman.
- Montana Veterinary Medical Association. Summer meeting. Livingston, Mont., June 13-15, 1956. G. A. Morrison, 916 Central Ave., Great Falls, secretary.
- Idaho Veterinary Medical Association. Summer meeting. Salmon City, Idaho, June 18-20, 1956. A. P. Schneider, 3025 N. Twenty-Third St., Boise, secretary.
- Michigan State Veterinary Medical Association. Annual meeting. Bancroft Hotel, Saginaw, June 21-22, 1956. Paul V. Howard, 4011 Hungsberger, N.E., Grand Rapids, secretary.
- Vermont Veterinary Medical Association. Annual summer conference. The Lodge at Smuggler's Notch, Stowe, June 21-22, 1956. A. E. Janawicz, Department of Agriculture, Montpelier, secretary.
- Utah Veterinary Medical Association. Annual meeting. Auditorium of the Provo Power Utilities Bldg., Provo, June 21-22, 1956. B. N. Horstman, 3685 Riverdale Rd., Ogden, secretary.
- Alberta Veterinary Medical Association. Annual convention. Macdonald Hotel, Edmonton, June 22-23, 1956. K. S. Penniford, 11403-66 St., Edmonton, secretary.
- North Dakota Veterinary Medical Association. Annual meeting. Jamestown, N. Dak., June 25-26, 1956. Dean Flagg, 202 Teton Ave., Bismarck, secretary.
- North Carolina Veterinary Medical Association. Annual meeting. Greensboro, N. Car., June 25-27, 1956. Martin P. Hines, Raleigh, executive committee.
- University of Wisconsin. Annual veterinary conference. University of Wisconsin, Madison, June 26-27, 1956. C. H. Brandly, head, Department of Veterinary Science.
- Maritime Veterinary Associations. Annual joint conference. Mount Allison University, Sackville, N. B., June 26-28, 1956. J. F. Frank, P.O. Box 310, Sackville, chairman.
- Wisconsin, University of. Postgraduate conference for veterinarians. University of Wisconsin, Madison, June 27-28, 1956. C. A. Brandly, head, Department of Veterinary Science.
- Maryland State Veterinary Medical Association. Annual summer meeting. George Washington Hotel, Ocean City, Md., June 28-29, 1956. John D. Gadd, Cockeysville, Md., secretary.
- Pacific Northwest Veterinary Medical Association (British Columbia, Oregon, Washington). Annual meeting. Vancouver, B. C., June 28-30, 1956. P. L. Stovell, 3187 W. Forty-Third Ave., Vancouver, coordinator.
- South Carolina Association of Veterinarians. Summer meeting. Clemson House, Clemson College, S. Car., June 28-30, 1956. B. C. McLean, P. O. Box 432, Aiken, program chairman.
- Mississippi State Veterinary Association. Annual meeting. Buena Vista Hotel, Biloxi, July 15-17, 1956. Harvey F. McCrory, P.O. Box 536, State College, secretary.
- Kentucky Veterinary Medical Association. Annual meeting. Seelbach Hotel, Louisville, July 16-17, 1956. Robert H. Singer, 136 Shawnee Pl., Lexington, secretary.
- Iowa State College. Annual conference for veterinarians. Memorial Union, Iowa State College, Ames, July 17-18, 1956. John B. Herrick, Iowa State College, Ames, co-chairman of conference.
- Virginia Veterinary Medical Association. Summer meeting. Natural Bridge Hotel, Natural Bridge, July 17-19, 1956. Wilson B. Bell, 1303 Hillcrest Dr., Blacksburg, secretary.
- Canadian Veterinary Association and the College of Veterinary Medicine of the Province of Quebec. Annual joint congress. Sheraton-Mont Royal Hotel, Montreal, July 19-21, 1956. Jacques St. Georges, publicity committee.
- Alabama Polytechnic Institute. Annual conference for veterinarians. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., July 22-25, 1956. R. S. Suggs, dean.
- Veterinary Public Health Session, to be held in conjunction with the annual health conference. Pennsylvania State University, State College, Pa., on Aug. 21, 1956, at 2:00 p.m. Rabies, trichinosis, brucellosis, and food poisoning will be discussed. Ernest J. Witte, P.O. Box 90, Harrisburg, Pa., chief, Division of Veterinary Public Health.
- Colorado Veterinary Medical Association. Annual meeting. Estes Park, Sept. 7-9, 1956. G. H. Gilbert, 5500 Wadsworth Blvd. Arvada, Colo., secretary.
- Pennsylvania State Veterinary Medical Association. Annual meeting. Bedford Springs Hotel, Bedford, Pa., Sept. 12-14, 1956. Raymond C. Snyder, N.W. Corner Walnut St., and Copley Rd., Upper Darby, Pa., secretary.
- New York State Veterinary Medical Society. Annual meeting. Concord Hotel, Kiamasha Lake, N. Y., Sept. 19-21, 1956. L. W. Goodman, 2303 Northern Blvd., Manhasset, general chairman; Miss Joan S. Halat, 803 Varick St., Utica, secretary.
- Washington State Veterinary Medical Association. Annual meeting. Davenport Hotel, Spokane, Sept. 21-22, 1956. P. J. Pfarr, 6306 N. Wall St., Spokane 53, general chairman.
- Oklahoma conference for veterinarians. School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, Sept. 27-28, 1956. A. L. Malle, Department of Veterinary Pathology, chairman.
- Missouri, University of. Annual short course for veterinarians. School of Veterinary Medicine, University of Missouri, Columbia, Oct. 1-2, 1956. Cecil Elder, chairman, short course committee.

(Continued on p. 28)



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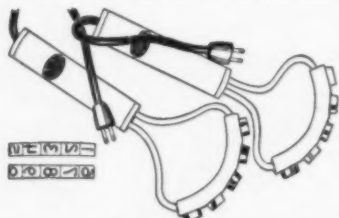


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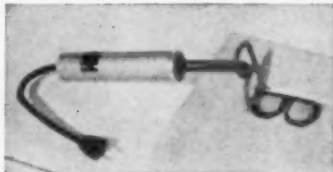
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(COMING MEETINGS—continued from p. 26)

Eastern Iowa Veterinary Association, Inc. Annual meeting. Hotel Montrose, Cedar Rapids, Oct. 4-5, 1956. Forrest E. Bruinsman, Traer, secretary.

American Veterinary Medical Association. Annual meeting. Municipal Auditorium, San Antonio, Texas, Oct. 15-18, 1956. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

U. S. Livestock Sanitary Association. Annual meeting. Morrison Hotel, Chicago, Ill., Nov. 28-30, 1956. R. A. Hendershott, 33 Oak Lane, Trenton 8, N. J., secretary.

Animal Care Panel. Annual meeting. Morrison Hotel, Chicago, Ill., Nov. 29-30, 1956. Robert J. Flynn, P.O. Box 299, Lemont, Ill., secretary.

Nebraska Veterinary Medical Association. Annual meeting. Hotel Lincoln, Lincoln, Dec. 3-5, 1956. W. T. Spencer, 1250 North 37th St., Lincoln, secretary.

### Foreign Meetings


Third International Congress on Animal Reproduction. Arts School, Cambridge University, Cambridge, England, June 25-30, 1956. Dr. Joseph Edwards, Milk Marketing Board, Thames Ditton, Surrey, England, honorary secretary.

Veterinary Conference, Jamaica Branch, British Caribbean Veterinary Association, Jamaica, B.W.I., July 28-Aug. 8, 1956. C. L. Bent, Veterinary Division, Department of Agriculture, Hope, Kingston, Jamaica, B.W.I. honorary secretary.

Tenth International Congress of Entomology. McGill University and University of Montreal, Montreal, Canada, Aug. 17-25, 1956. J. A. Downes, Division of Entomology, Science Service Bldg., Ottawa, Ont., Canada, secretary.

International Association of Hydatidology. Sixth Congress. Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, 1 MacKenzie King St., Athens, Greece, general secretary.

(Continued on p. 29)



**dispense**

**Terramycin**

BRAND OF OXYTETRACYCLINE

for

**GOOD RESULTS**

**Pfizer**

### Regularly Scheduled Meetings

**ALABAMA**—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. W. R. Laster, Jr., 213 N. 15th St., Birmingham, Ala., secretary.

**ARIZONA**—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Pima County Veterinary Medical Association, the third Wednesday of each month in Tucson. E. T. Anderson, 8420 Tanque Verde Rd., Tucson, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

**CALIFORNIA**—Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Wilfred Pimmett, 3455 S. Elm Ave., Fresno, Calif., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. B. C. Watson, 825 14th St., Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Co-

vell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freepoint Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. Howard C. Taylor, 2811 West Olive St., Burbank, Calif., secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

**COLORADO**—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of

(Continued on p. 30)



### HIGHLY EFFECTIVE • CONVENIENT

## KILL Flies and Insects With These Arnold Products • FLY KILLER DRY BAIT

Simply scatter direct from container to ground. Flies are attracted to particles, feed and die. One pound baits 2,000 square feet. Ideal for use in and around veterinary hospitals, livestock buildings, garbage disposal areas, etc. Economical — neat — reliable — practical. Available in One Pound Jars, and 25 lb. Drums.

## • PEST KILLER POWDER

— Kills fleas, lice, mites, ticks, mosquitoes, hornflies, chiggers, spiders, roaches, ants and silverfish. For use on the hair of all domestic animals with the exception of cats and milking cows. Also an effective killer when dusted on the ground, animal beddings, floors, cracks, baseboards and hiding places in infested areas. Available in 100 Gram Sifters, and 25 lb. Drums.

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**ARNOLD LABORATORIES**  
NEW CASTLE, INDIANA



- Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.
- DELAWARE**—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.
- FLORIDA**—Jacksonville Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. George F. Yopp, 4644 Main St., Jacksonville, Fla., Secretary.
- Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach, Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.
- Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.
- South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.
- GEORGIA**—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.
- ILLINOIS**—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.
- Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.
- INDIANA**—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.
- Michiana Veterinary Medical Association, the second Thursday of every month, except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.
- Tenth District Veterinary Medical Association the third Thursday of each month. W. E. Sharp, Union City, Ind., secretary.
- IOWA**—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. D. A. Buchanan, Grundy Center, Iowa, secretary.
- Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.
- Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.
- Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wineslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.
- KENTUCKY**—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.
- Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.
- MARYLAND**—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.
- MICHIGAN**—Mid-State Veterinary Medical Association,

(Continued on p. 32)

## SELF FILLING SYRINGE

### The multi-injector's third hand



Another accurate smooth working ground glass barrel — leak proof metal plunger instrument with many possibilities. Adjustable for any capacity. By attaching one end of a rubber tube to the self-filling syringe and the other to a bottle of serum or vaccine any number of quick 1/4cc to 5cc accurate dose injections can be made. The instrument is operated with one hand. Anyone who injects a large number of animals will find the Self-Filling Syringe will pay for itself both in labor and serum saved after the first day's use.

Sizes 2cc and 5cc

Literature upon request

Inquire at your nearest veterinary dealer or wholesaler about this new improved outstanding product.

Boston Instrument Mfg. Co. Inc., 50 Thayer Street, Boston 18, Mass.

Ordinary mastitis ointment remains in a blob, restricting the ability of the ingredients to reach the infection.



# PROOF

## **Terramycin®\* Animal Formula for Mastitis diffuses immediately into the infected quarter**



Terramycin Animal Formula for Mastitis reaches the infection quickly with full broad-spectrum action.

These photographs of translucent plastic "quarters" show the exceptionally rapid diffusion of Terramycin Animal Formula for Mastitis contrasted with the restricted spread of ordinary ointments. This is one of the reasons Terramycin Animal Formula for Mastitis is not only *effective*, but is *fast*.

**Supplied:** Tubes of 1/2 oz. and 10-dose vials. Each gram contains 30 mg. of calcium dioxytetracycline and 10,000 units of polymyxin B sulfate.

\*Brand of oxytetracycline

Department of Veterinary Medicine  
PFIZER LABORATORIES  
Division, Chas. Pfizer & Co., Inc.  
Brooklyn 6, N. Y.



the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Mercalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genessee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Southern New Jersey Veterinary Medical Association, the

third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. J. W. Peace, High Point, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. Wm. Allen Potts, 401 W. James St., Mount Olive, secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. W. W. Dickson, Box 1071, Gastonia, N. Car., secretary.

OHIO—Cuyaboga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. James M. Brown, 2818 W. Britton Rd., Oklahoma City, secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Merle S. Watts, 5302 E. 11th St., Tulsa, Okla., secretary.

(Continued on p. 33)

## A MESSAGE TO VETERINARIANS



**BUY ONLY** an X-ray outfit designed exclusively for veterinary use. Don't make the mistake of buying an X-ray unit for use on the human body.

## X-RAY ANIMAGRAPH

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A complete X-ray examination of the human body requires both Fluoroscopy and Radiography.

No Army, Navy or civilian hospital X-ray Department is complete without Fluoroscopy and Radiography.

If Fluoroscopy is a necessity for these hospitals, it is equally necessary for Animal Hospitals.

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Kindly send me descriptive information, including prices and terms, on the Campbell X-Ray Animagraph, designed for safety and convenience of veterinarians.

Dr. \_\_\_\_\_  
(Please Print)

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\_\_\_\_\_  
(City and State)

**PENNSYLVANIA**—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

**SOUTH CAROLINA**—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

**TEXAS**—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

**VIRGINIA**—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

**WASHINGTON**—Seattle Veterinary Medical Association, the third Tuesday of each month in the Trinity Episcopal Church, 8th and James St., Seattle, Wash. P. R. Des Rosiers, 5508 2nd Ave., N. W., Seattle 7, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. Jo Walker, Agriculture Experiment Station, Puyallup, Wash., secretary.

**WEST VIRGINIA**—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W., Huntington, W. Va., secretary.

**WISCONSIN**—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 261 West Devon St., Milwaukee 17, Wis., secretary.

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**Terramycin**

BRAND OF OXYTETRACYCLINE

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**ADDED  
INCOME**



**Pfizer**

Compare  
**PRICE**  
Compare  
**RESULTS**  
and you will always  
Prescribe  
**MASTICS®**

ACTUAL SIZE  
THE ORIGINAL  
UDDER BOUGIE

**MASTICS P&S**

100,000 units penicillin  
50,000 mcg. dihydrostreptomycin

**MASTICS** act fast because medication in high concentration is quickly dispersed throughout the quarter. Improvement often noted in 12 hours.

**MASTICS** contain no grease, no wax, no insoluble materials to remain in the udder retarding antibiotic action. **MASTICS** milk out completely—produce no residue on the strainer.

**MASTICS** are so effective, cows are returned to the herd more promptly with less loss of production.

**LOW IN COST...HIGH IN POTENCY**  
**MASTICS SAVE TIME, MONEY, MILK**

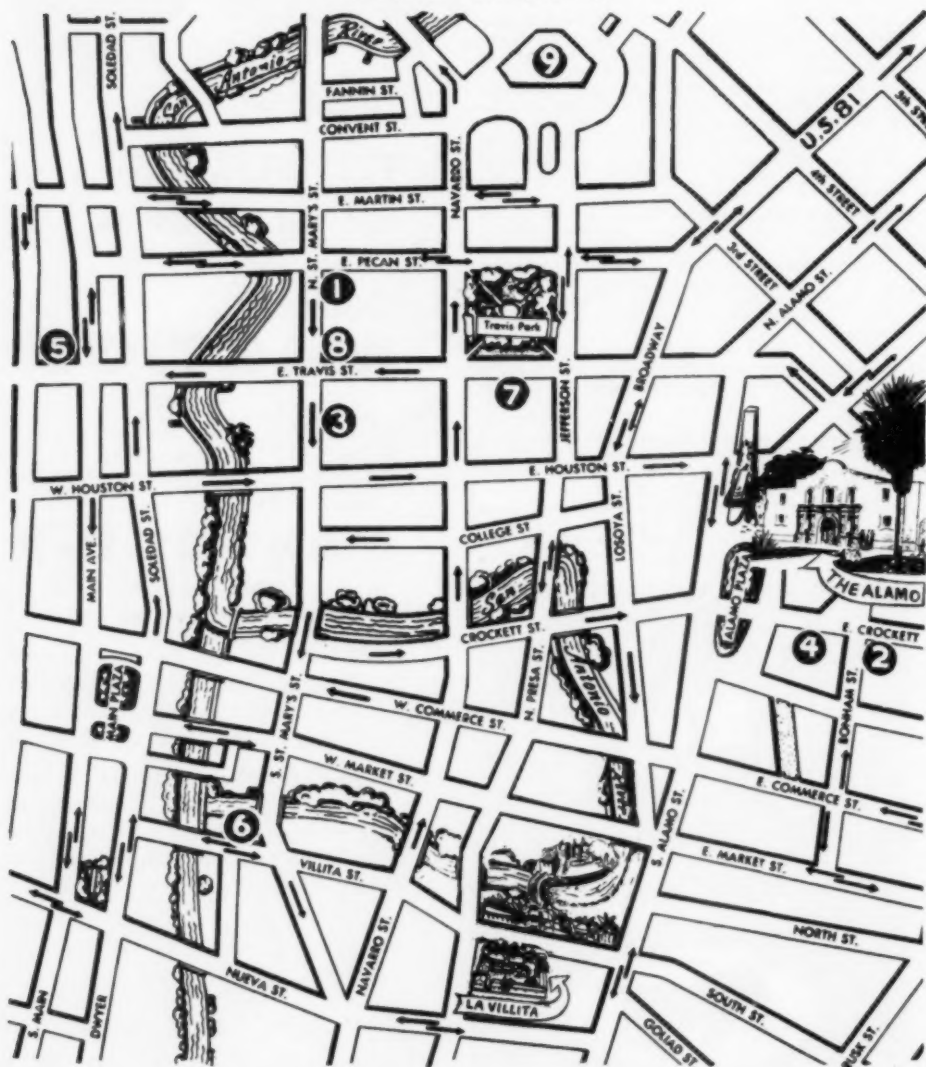
WRITE FOR SAMPLES AND PRICES

The **M**artin Laboratories  
**MASTICS**  
West Chester, Penna.



## Hotel Map of San Antonio

The general sessions and larger section meetings will be held at the Municipal Auditorium (No. 9). The smaller section meetings will be held at the Gunter Hotel (No. 3).



1. Blue Bonnet Hotel
2. Crockett Hotel
3. Gunter Hotel

4. Menger Hotel
5. Robert E. Lee Hotel
6. Plaza Hotel

7. St. Anthony Hotel
8. White Plaza Hotel
9. Auditorium

Motel Information—Motels listed on the reservation form are located on Austin Highway, U.S. 81, which enters San Antonio via Broadway. Rio Lado Motel is at 1100 N. St. Mary's St., near the business section.

# HOTEL RESERVATIONS — SAN ANTONIO CONVENTION

**Ninety-Third Annual AVMA Meeting, Oct. 15-18, 1956**

**All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.**

Hotels—Motels and Rates (all are air-conditioned)

▶ HOTEL	SINGLE	DOUBLE	TWIN BEDS
1. Blue Bonnet	\$3.00-5.00	\$5.00-8.00	\$ .....
2. Crockett	\$3.50-4.50	\$5.50-6.50	.....
3. Gunter	\$5.00 and up	\$6.50 and up	.....
4. Menger	\$5.00-8.00	\$7.00-12.00	.....
5. Robert E. Lee	\$3.50-5.00	\$5.00-6.00	\$6.00-8.00
6. St. Anthony	\$5.00 and up	\$7.00 and up	.....
7. White Plaza	\$3.25 and up	\$4.75 and up	.....

▶ MOTEL	RATES
1. Aero	\$7.50-9.00
2. Aloha	\$6.00 and up
3. Belvedere	\$6.00-10.00
4. Casa Linda	\$6.00 and up
5. Koronado	\$5.00 and up
6. Park	\$4.00-15.00
7. Rio Lido	\$6.00-10.00
8. The Westerner	\$5.00 and up
9. Flamingo	\$6.00 and up

Tear Here

## RESERVATION FORM — AVMA CONVENTION — SAN ANTONIO

To: HOUSING BUREAU, San Antonio Visitors and Information Department, Chamber of Commerce, Insurance Building, San Antonio 5, Texas.

Please make reservations indicated below:

### HOTEL

\_\_\_\_\_ Single room(s) at \$ \_\_\_\_\_  
 \_\_\_\_\_ Double bed room(s) at \$ \_\_\_\_\_  
 \_\_\_\_\_ Twin-bed room(s) at \$ \_\_\_\_\_  
 \_\_\_\_\_ Suite (specify type of accommodations wanted)

(Three choices MUST be shown)

First choice hotel \_\_\_\_\_  
 Second choice hotel \_\_\_\_\_  
 Third choice hotel \_\_\_\_\_

Arriving on (date) \_\_\_\_\_ at \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.

Leaving on (date) \_\_\_\_\_ at \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.

Will be occupied by (attach list of additional names if necessary).

Your Name (Print or Type) \_\_\_\_\_

Street Address \_\_\_\_\_ City and State or Province \_\_\_\_\_

### MOTEL

Indicate type of accommodations

(\_\_\_\_\_ )  
 Unit, Cabin,

wanted for \_\_\_\_\_ persons at \$ \_\_\_\_\_  
 No. rate

(Three choices MUST be shown)

First choice motel \_\_\_\_\_  
 Second choice motel \_\_\_\_\_  
 Third choice motel \_\_\_\_\_



dispense

**Terramycin**

BRAND OF OXYTETRACYCLINE

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**FOLLOW-UP  
THERAPY**

*Pfizer*

## CLASSIFIED ADVERTISEMENTS

**Personal Want Ads**—\$4.00 for the first 25 words and 10 cents for each additional word; 35 cents for use of box number.

**Commercial Want Ads**—\$5.00 for the first 25 words, 25 cents for each additional word.

Remittance must accompany ad.

### Deadlines for Want Ads

For JOURNAL dated 1st of month — 8th of month preceding date of issue.

For JOURNAL dated 15th of month — 22nd of month preceding date of issue.


Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

### Wanted—Veterinarians

Veterinarian wanted for well-established small animal practice in Florida; profit-sharing arrangement. Address Karen M. Eastman, 672 N.E. 79th St., Miami, Fla.

Young man with Florida license wanted to take

(Continued on p. 38)



My **HISTACOUNT** Bookkeeping System

really saves me work . . .

In just minutes, I get a complete financial picture of my practice . . . day by day . . . every day.

See for yourself what a work-saver Histacount is . . . mail the convenient coupon today . . . no obligation.

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PROFESSIONAL PRINTING COMPANY, INC.  
NEW HYDE PARK, N. Y.

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Dr. \_\_\_\_\_

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**immunize against distemper and  
hepatitis with  
one single shot...**

Sin-jex is the first vaccine to utilize a vacuum-dried modified live virus distemper fraction, with killed virus hepatitis fraction as diluent! This modified live virus distemper fraction elicits a more marked response; hence, Sin-jex assures more positive immunity.

R<sub>L</sub>'s "reconstitiquick" feature means Sin-jex reconstitutes instantly in a fine, homogenous suspension which passes readily through a 22 gauge needle. Sin-jex requires a simple subcutaneous injection which may be given before or after weaning—simultaneously with or without Anti-Canine Distemper Serum and Anti-Infectious Hepatitis Serum (Bival Sera R<sub>L</sub>).

Available from independent ethical distributors.

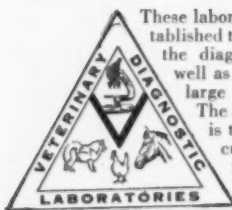
Sold only to graduate veterinarians  
**Research Laboratories, Inc.**  
St. Joseph, Missouri

distemper hepatitis

**sin-jex**

vaccine

## Laboratory Service for Veterinarians



These laboratories have been established to aid veterinarians in the diagnosis of obscure as well as common ailments in large and small animals. The chief aim of our staff is to give quick and accurate diagnosis at all times.

Our service includes fecal ex-

aminations, antibiotic sensitivity tests, urinalyses, blood counts, tissue sections, bacteriological cultures, cultures for ringworm and blood chemistry. It is designed to assist owners and breeders of stock of all kinds including dogs, cats, horses, cattle, poultry, hogs and sheep.

Sample containers and price list on request.

### VETERINARY DIAGNOSTIC LABORATORIES

220 East 23rd St., New York 10, N.Y.

(CLASSIFIED ADS—continued from p. 36)

over small animal practice. No experience necessary. Address "Box L 3," c/o JOURNAL of the AVMA.

Veterinarian wanted for mixed Connecticut practice; a good future assured with partnership possibilities. Address "Box L 4," c/o JOURNAL of the AVMA.

#### Remittance must accompany advertisement

Veterinarians—senior career position open at the Pan American Foot and Mouth Disease Center located near Rio de Janeiro, Brazil. Requirements: demonstrated administrative ability and considerable experience in teaching and/or virus laboratory and research work. Salary commensurate with qualifications. Apply Personnel Officer, Pan American Sanitary Bureau, 1515 New Hampshire Ave., Washington 6, D.C.

#### Wanted—Positions

Will graduate from University of Pennsylvania in June, 1956; desire position with general practitioner in Pacific Northwest. Veteran, married. Address "Box L 8," c/o JOURNAL of the AVMA.

May graduate, married, veteran, desires association with busy small animal practitioner; preferably New England, New Jersey, New York, Pennsylvania, Delaware, Maryland, Washington, D.C., or Virginia. Experienced, excellent personality, hard worker. Address "Box L 9," c/o JOURNAL of the AVMA.

(Continued on p. 42)

### here's the economy balling gun for dispensing to your clients

When you want to leave a balling gun with a client, you can't dispense a gun that costs you \$3 or \$4. That is why we had this economy model made. Made just for dispensing, it's a regular one-ounce size, standard 16½ inch gun. Singles cost \$1.90; six, \$10.85; and a dozen, \$20.45. Order by number please.



advanced instrument designs for advanced veterinary surgery



JSA-3935,  
economy balling gun,  
six for \$10.85.

Jensen-Salsbery Laboratories, Inc.  
Kansas City, Missouri



I've just used it. Very effective!

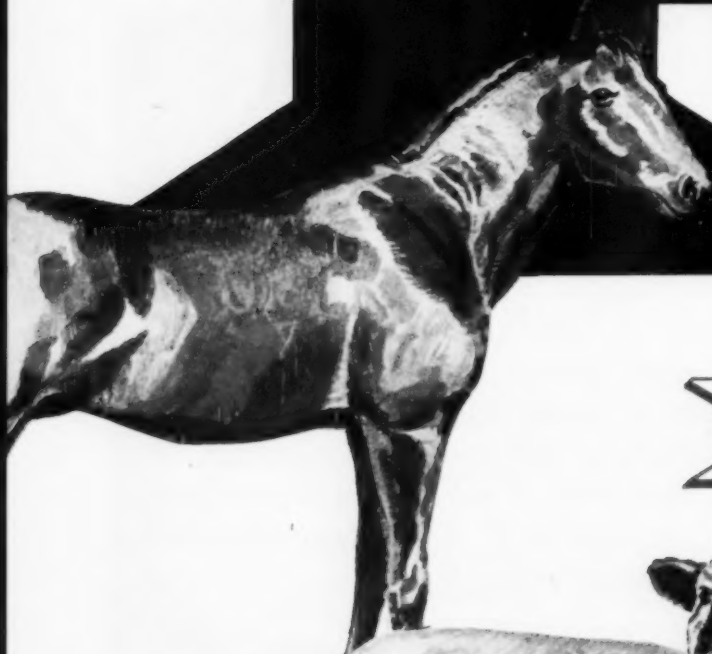
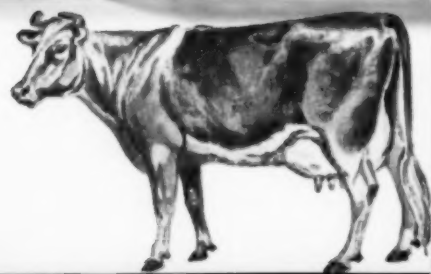
Yes, widest  
broad-spectrum activity.

## **Pfizer** Tetracycline-Vet Soluble

**Powder** Happily combining unsurpassed antibacterial activity and exceptional ease of administration. Completely water-soluble, producing crystal-clear solutions for watering, drenching, or irrigating. May also be added to feed. *Available in bottles of ½ lb., containing 25 Gm. of tetracycline activity per lb. An average teaspoonful contains 200 mg. of tetracycline activity.* SOLD ONLY TO VETERINARIANS

*Department of Veterinary Medicine, PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*





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High tissue levels

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Low toxicity

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Many dosage forms



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TETRACYCLINE

Intravenous, 100 mg.-2.5 Gm.

OBLETS®, 4's-6 x 4's

Available in: Intramuscular, 100 mg.-500 mg.-1 Gm.-5 Gm.

Ophthalmic Ointment 1%, 6 x 1/8 oz. tubes

Topical Ointment 3%, 1 oz. tubes

Mastitis Ointment, 1/4 oz. tubes

Soluble Powder (Tinted),

1/4 lb.-1/2 lb.-1 lb.-5 lb.

Powder 2%, 35 Gm.

Tablets, 50 mg.-25's-100's-

100 mg.-25's-100's-250 mg.-16's-100's

Capsules, 50 mg.-25's-100-100 mg.-100's-

250 mg.-16's-100's

*Available to Veterinarians Only*

LEDERLE LABORATORIES DIVISION AMERICAN CYANAMID COMPANY PEARL RIVER, N.Y.

Veterinarian, 1956 graduate, with considerable sales experience, desires affiliation with ethical pharmaceutical firm in need of an outstanding public relations man. Address "Box L 10," c/o JOURNAL of the AVMA.

#### Wanted—Practices

Want to buy predominantly small animal practice in Pennsylvania, New York, or New England. Must be active, lucrative practice; ample capital available. Address "Box J 6," c/o JOURNAL of the AVMA.

Small animal practice wanted in western New York; must be a going, established practice com-

pletely equipped. Substantial down payment. Address "Box E 7," c/o JOURNAL of the AVMA.

Experienced veterinarian, 30, married, desires to purchase small animal practice, or position with opportunity for ownership or partnership. Capital available. Address "Box L 2," c/o JOURNAL of the AVMA.

Graduate, 1955, wants employment in large animal or mixed practice in Kentucky; have license. Available July 1. Address "Box L 14," c/o JOURNAL of the AVMA.

#### For Sale or Lease—Practices

Wisconsin dairy practice for sale, with or without real estate. Details furnished on request. Address "Box E 12," c/o JOURNAL of the AVMA.

Large animal practice for sale in southern Minnesota; without real estate. Details furnished on request. Address "Box L 1," c/o JOURNAL of the AVMA.

(Continued on p. 44)

#### MEDICAL EDITORIAL ASSISTANT

Excellent opportunity in our clinical research dept. for writer-editor to analyze medical data and write research reports for publication; to compile technical information for internal use; to edit and rewrite manuscripts; and to search medical literature and prepare annotations. College training in biological science plus a thorough knowledge of medical terminology and 3 to 5 years' experience in medical writing or editorial work essential.

Send Resumé to Personnel Director  
**SCHERING CORP.**  
Manufacturer of Fine Pharmaceuticals  
60 Orange St., Bloomfield, N. J.

Send for FREE 36-page Treatise on

#### CARROT OIL VITAMINS

Details the advantages of carrot oil vitamins when used in feeds to improve breeding results; to destroy oxidized milk flavors; and to promote general good health and glossy coats. Contains much information. Replete with data and references. Send for it today.

**NUTRITIONAL RESEARCH ASSOCIATES**  
Dept. 251-M, South Whitley, Indiana



## small animal therapy note

new! Jen-Sal's Cycloderm in a  
free-flowing lotion

New lotion formula of Jen-Sal's already outstanding external fungicide attacks fungi effectively by deep and rapid penetration of hair follicles. Odorless, non-staining, non-irritating Cycloderm Lotion can be dispensed for dry eczemas or ringworm to the complete satisfaction of you and your clients. Packaged in cartons of six — one oz. plastic squeeze bottles with slip-off labels.



**Jensen-Salsbery Laboratories, Inc.**  
Kansas City, Missouri

# New Instant Dog Food Mix

Absorbs liquid almost instantly,  
stays crumbly-moist, won't pack. Meaty aroma  
tempts finicky appetites... 16 health-giving  
benefits help make dogs champions.

**QUICK MIXING meal has everything  
professional men want**

Golden-brown, irregular-shaped kernels of new Quick Ken-L-Meal absorb liquid far faster than any other brand. Stays crumbly-moist, won't pack, won't stick to the bottom of the feeding dish or the roof of your dog's mouth. He can easily eat it all!

**MEATY AROMA AND FLAVOR  
PLUS SUPER NOURISHMENT**

High-meat-meal, super nourishing Quick Ken-L-Meal releases all the health-giving benefits of 16 rich, wholesome nutrients into your dog's system—every vitamin and mineral a dog is known to need, plus even more protein nourishment than fresh-ground meat.

- First Choice of 9 Out of 10 Dogs In Recent Free-Choice Feeding Tests!
- First Choice of Kennel Men In Independent Kennel-Feeding Tests!

**FREE! New Quick Ken-L-Meal  
Generous Trial Supply if You Act Now!**

To introduce you to the revolutionary benefits of New Quick Ken-L-Meal... to let you see for yourself how dogs prefer it to other brands... we'll deliver a free trial supply so you can test it against your present brand. There is no obligation.

Clip this coupon... get your free trial supply



Mail this immediately to: KEN-L-PRODUCTS Division, The Quaker Oats Company, Merchandise Mart, Chicago, Ill.

*I want to try new Quick Ken-L-Meal in my kennel. I want to see how it performs against my present brand of dog food. I am under no obligation whatsoever.*

Name \_\_\_\_\_ Breed of dogs \_\_\_\_\_

Address \_\_\_\_\_ No. of dogs \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

This offer is limited. So mail this coupon today!

## ***Skin Adherent No. 2***

**Non-irritating liquid adhesive  
for strapping and padding**

*Send for Sample*

**The MOWBRAY COMPANY,  
Waverly, Iowa**

### **Eaton Laboratories Establishes Veterinary Sales Division**

The establishment of a veterinary sales division of Eaton Laboratories is announced by L. Eugene Daily, M.D., vice-president of Eaton Laboratories, Division of the Norwich Pharmacal Co., Norwich, N. Y.

The new division has a staff of representatives who will call on veterinarians. It will also handle the distribution and sales of Eaton nitrofurantoin products through professional veterinary distributors.

The Eaton veterinary medical division has been functioning for several years, with a staff of three graduate veterinarians, headed by Harold D. B. Roberts, V.M.D. It will continue to conduct clinical studies on specialties, having veterinary application, which are developed in Eaton's research division.

Austin Laboratories, Ltd., of Guelph, Ont., will continue to distribute the Eaton veterinary line in Canada.

dispense

# **Terramycin**

BRAND OF OXYTETRACYCLINE

for

## **CLIENT SATISFACTION**



**Pfizer**

(CLASSIFIED ADS—Continued from p. 42)

Good mixed practice with clinic for sale in Texas town, over 5,000 population. Reason for selling, have something elsewhere suitable for wife's health. Address "Box L 5," c/o JOURNAL of the AVMA.

Small animal hospital, possible upstairs apartment, for sale near Midwest city of 200,000 population. Only veterinarian in about 10-mile radius; large piece of real estate on 4-lane state highway; 80% small animals, extensive large animal practice possible. Includes nearly new large and small animal equipment; operating table, portable x-ray, refrigerator, drugs. Good clientele; excellent opportunity to become established with small investment. Has greater potential than first year gross of over \$8,000. Illness forces sale at sacrifice; \$16,000 with \$5,000 down. Address "Box L 12," c/o JOURNAL of the AVMA.

### **Remittance must accompany advertisement**

Small animal hospital for sale in smog-free San Fernando Valley. Fully equipped, 6 years old; boarding and bathing facilities. Average gross, \$22,000; easy terms. Address "Box L 6," c/o JOURNAL of the AVMA.

Established, general practice for sale in growing northern California community; 85% small animals. New home and clinic on 3 acres. Gross, \$15,000; practice, real estate, and drugs, \$25,000. Address "Box L 7," c/o JOURNAL of the AVMA.

Minnesota dairy practice in Twin City milk shed for sale with or without equipment and real estate. Health reason for sale. Address "Box L 11," c/o JOURNAL of the AVMA.

Lucrative Massachusetts practice for sale; no competition. Price of \$20,000 includes combined home-clinic, plus all equipment and drugs. Full particulars on request. Address "Box K 11," c/o JOURNAL of the AVMA.

Small animal practice for sale in southern California; no real estate. Must sell quickly or lease with option to buy; reason, health. Priced within reason with liberal terms. Address "Box L 13," c/o JOURNAL of the AVMA.

(Continued on p. 45)

**BROKEN TEETH**

—repaired in bottom clipper blades.  
Top and bottom blades sharpened to  
match. Save money—Guaranteed.  
Prices on Request

HIGHLY SPECIALIZED SHARPENING  
Sales—Repairing on Oster  
and Stewart clippers.

Sharpened Blades Tested on Rabbit Fur  
OSTER \$2.50 STEWART \$1.00  
Prompt Service—Est. 17 years

MAIL TO

**CLIPPER SERVICE** OAK RIDGE  
NEW JERSEY

**Miscellaneous**

For sale—large animal operating table; used only a few times. Price, \$200. Address Dr. G. E. Gilbertson, Albany, Ind.

Opportunity to buy veterinary mobile unit with 4-wheel drive complete for \$2,620; excellent condition, 21,000 miles; extras included. Write or call Baldwin Veterinary Hospital, RFD 2, Putney, Vt.; phone Brattleboro, Alpine 45422.

Breedersleve—The disposable obstetrical sleeve. Package of 20 with detachable chest band, \$5.00; lower wholesale prices. Free sample upon request. Breeders Equipment Co., Flourtown, Pa.

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**Programs on Veterinary Service Furnished to Television Stations by Associated Veterinary Laboratories**

A series of television programs on animal diseases and the value of modern veterinary service is now being furnished to leading TV stations by Associated Veterinary Laboratories.

The series is issued to the farm editors of 140 leading television stations, coast to coast. The programs, in words and pictures, show common animal disease hazards and bring out the importance of veterinary service in coping with them. Subjects already scheduled for television include: swine brucellosis, calf loss prevention, swine erysipelas, hog cholera, pasture-season hazards, "lumpy jaw," pink-eye, encephalomyelitis, shipping fever, swine influenza, parasites, and ergot poisoning.

Other mediums used in the public relations program for the profession, underwritten by members of Associated Veterinary Laboratories, include newspapers, farm magazines, radio, and motion pictures. Officials of AVL have reported that the organization's film about the veterinary profession was viewed by a television audience of more than 13,000,000 last year.

To insure prompt delivery of want ads, replies should include the complete box number.

**AKRATAN****"Jumbolus"  
for diarrhea**

Tannin extract	100 gr.
Alumina hydrate	100 gr.
Akrodin®	60 gr.
Magnesium trisilicate	30 gr.
Charcoal	30 gr.
Magnesium carbonate	30 gr.
Bentonite	20 gr.

Adsorbates, coagulants and detoxicants for the symptomatic treatment of diarrheas in larger calves and adult cattle.

Usual dose: 1 jumbolus to each 350-lb. body weight, repeated at 12- to 24-hour intervals, as necessary. Fits usual 'equine' balling gun. Creased for fractional dosage.

25 ..... 2.15 100 (4-25's) ..... 8.00

**CURTIS** *laboratories*  
Pharmaceutical Manufacturers to the  
Veterinary Profession - Since 1918  
KANSAS CITY, KANSAS





## C. G. P. Reinforced

*gives Therapeutic Amounts  
of Calcium, Phosphorus,  
Magnesium & Dextrose*

**use C. G. P. Reinforced to treat  
deficiency conditions  
due to disturbed metabolism.**

... the most complete preparation offered the Profession . . . for the simultaneous administration of therapeutic amounts of Calcium, Phosphorus, Magnesium and Dextrose. Animals deficient in these elements due to disturbed metabolism, caused by unbalanced mineral and carbohydrate ratios in body, food or soil respond readily to C.G.P. Reinforced.

Use C.G.P. Reinforced for your next case of milk fever, grass tetany, or hypoglycemia. Similar conditions in other animals also respond equally well to C.G.P. Reinforced therapy.

C.G.P. Reinforced is administered intravenously and/or intraperitoneally. For cows give from 250 cc. to 500 cc.; for sheep and swine 50 cc. to 100 cc. Supplied in Ctn. 12—500 cc. bottles.

**SEE HAVER-GLOVER MESSENGER  
FOR FORMULA AND PRICE**

**HAVER-GLOVER**  
*Laboratories*  
KANSAS CITY, MO.

Lockhart announces



**ALVA\***

**Erysipelas Vaccine Avirulent**

With the addition of Alva, Lockhart offers the graduate veterinarian a complete choice of biologics for the control of erysipelas.

Alva is produced from an antigenic strain of *Erysipelothrix rhusipathiae* which has been thoroughly tested for its avirulence. It provides a safe durable immunity with a live culture vaccine. Alva is available to veterinarians only.

**Alva offers these 5 advantages:**

- Effective and economical
- Avirulent for safety
- Use with or without serum, on all or part of the drove.
- Live culture for high antigenic response.
- Desiccated for maximum potency . . . vacuum stoppered for greater stability.

Alva is administered subcutaneously in 2 cc doses. Exposed or infected swine may be given anti-swine erysipelas serum simultaneously. Swine held beyond normal market period, or breeding stock, should be re-vaccinated.

*"Better Biologics for the Graduate Veterinarian"*

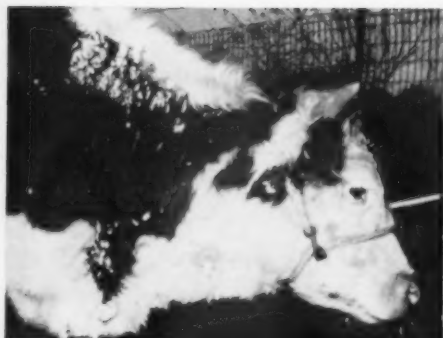


\*Trademark

**ASHE LOCKHART, INC.**

800 WOODSWETHER ROAD

KANSAS CITY 6, MISSOURI

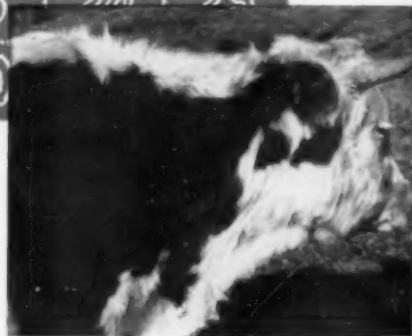


< from this

Typical Case History			
WED	THUR	FRI	SAT
1	2	3	4
8			profuse wart growth at date of first 25-cc. injection
12	13	14	15
16	17	18	19
20	21	22	23
24	25	26	27
28	29	30	31
warts degenerating fourteen days later, time of second injection			complete recovery three to seven weeks following first injection

to this >

# after 2 injections!



field reports show Jen-Sal Wart Vaccine  
90% effective against virus-borne  
seed warts of cattle...

Good planning calls for pastured cattle to be rid of seed warts during the summer fly season. Field reports from cattle raising countries all over the world show that JEN-SAL CHICK EMBRYO ORIGIN WART VACCINE does the job quickly and effectively with minimum incidence of anaphylaxis (foreign protein shock). Following injection, cattle warts undergo dramatic degeneration, dropping off in three to seven weeks.

Recommended routine treatment is two 25-cc. subcutaneous injections given at ten day intervals, or a single 25-cc. injection with a simultaneous 2-cc. dose administered intradermally.

JEN-SAL BOVINE WART VACCINE (CHICK EMBRYO ORIGIN)

50 cc. vial — \$2.25



Jensen-Salsbery Laboratories, Inc.  
Kansas City, Missouri



use  
Jen-Sal's  
exclusive  
chick embryo origin  
Canine Wart Vaccine  
for  
100% effectiveness  
against  
virus-borne  
seed warts  
of dogs!

6—2 cc. vials—\$6.00